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Capturing Fidelity to Understand Implementation of Trauma-focused Cognitive Behavioral Therapy in Juvenile Justice Correctional Facilities

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Dedication

I dedicate this dissertation to my father. You were and continue to be my paramount inspiration and support —this degree and dream would not be possible without you.

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Abstract

Capturing Fidelity to Understand Implementation of Trauma-focused Cognitive Behavioral Therapy in Juvenile Justice Correctional Facilities

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The primary objective of this study examined the relationship between therapist treatment fidelity to Trauma-focused Cognitive- Behavioral Therapy (TF-CBT) and youth self-reported post session symptom severity. TF-CBT was provided to 21 incarcerated youth by 8 therapists employed in 3 juvenile correctional facilities. This study used observational coding measurement of 53 TF-CBT therapy audiotapes to measure therapist fidelity components: adherence to TF-CBT specific strategies, technical competence, nonspecific competence, and patient engagement across three treatment phases (1=psychoeducation phase, 2= skills building phase, and 3= trauma narrative and processing). Results found treatment fidelity did not relate to improved youth self -reported symptom severity across treatment. Higher pretreatment symptom severity was the only positive predictor of TF-CBT effectiveness and it related to a worsening of post-session symptoms. The second aim examined treatment adherence reliability of therapist self-report and observational coder ratings. Therapists and trained observational coders

provided adherence ratings on 49 TF-CBT treatment sessions. Correspondence between therapists and observational coders was low, with 8 of 11 of the codes having a Kappa value of .4 or lower. Results indicate therapists overreport treatment adherence in comparison to observational coders. Overall, the study's findings suggest that therapist treatment fidelity to a protocol may not be the key mechanism related to EBT effectiveness in unique settings with complex populations. Substantial research is still needed to corroborate the relationship between treatment fidelity and outcomes across settings, treatments, and informants. Implications for implementation science and effectiveness research with juvenile justice youth are also discussed.

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Chapter 1: Introduction

One in five youth experiences a mental health disorder across their lifetime and even more sobering, one out of every ten youth experience substantial interference on their ability to function socially, academically, and emotionally due to their psychiatric diagnosis (Brauner & Bowers, 2006; Merikangas, 2009; 2010). Despite the high rates of mental illness, the majority of children and adolescents, hereafter called youth, who experience any mental health disorder will not receive any treatment (Burns et al., 1995; Katoaka, Zhang, & Wells, 1992; Merikangas et al., 2010). Youth with unmet mental health concerns are at risk for school suspensions and dropout, increased family conflict, impaired social relationships, physical disability, and involvement in the juvenile justice system, reducing long term quality of life (Child Mind Institute, 2016). The majority of adult mental health disorders begin in childhood, and untreated youth mental health disorders lends to pervasive impairment in adulthood. Perhaps most disheartening, adult mental health disorders are a leading cause of disability worldwide (World Health Organization, 2002). Fortunately, efficacious psychosocial treatments have been developed to address youth mental health disorders (Weisz & Gray, 2008; Weisz, Hawley & Jensen-Doss, 2004). Treatments that have been tested, primarily in randomly controlled trials (RCTs) and found to benefit youth relative to comparison conditions, such as a wait-list or attention-placebo condition, are often referred to as "evidence-based treatments" (EBTs). EBTs for youth psychopathology in children and adolescents outperform usual clinical care (Weisz et al., 2013), but their use still remains infrequent among community therapists.

Unfortunately, when youth receive mental health treatment, they are unlikely to receive an EBT from their mental health care provider (Herschell, McNeil, & McNeil, 2004). Studies examining mental health treatment in typical service settings report that community therapists value a wide range of strategies from various theoretical modalities, and these services can be characterized as eclectic (Brookman-Frazee, Garland, Taylor, & Zoffness, 2009; Garland, Bickman & Chorpita, 2010). Observations of usual care practice indicate when therapists attempt to provide EBTs, they deliver a breadth of EBT practice strategies implemented with low intensity (Garland, Brookman-Frazee et al., 2010). Perhaps as a consequence, youth receiving mental health services in usual care often get worse or do not improve across an episode of care (Warren, Nelson, Mondragon, Baldwin, & Burlingame, 2010).

In theory, deploying EBTs into usual care settings makes sense; however, EBTs developed under rigorously controlled conditions in academic settings have been shown to fare less well when the providers, clients, and organizations are more similar to those found in typical care (Weisz, Jensen-Doss, & Hawley, 2006; Weisz et al., 2013). Whereas treatments developed in academic settings and implemented by expert providers to treat carefully recruited clients have shown large clinical effect sizes (Kazdin, 2008; Weisz, Weiss, Han, Granger, & Morton, 1995), these same treatments show attenuated benefit in more "real world" settings, such as community clinics (Gibbons, Stirman, DeRubeis, Newman, & Beck, 2013; Weisz et al., 2013). The current challenge remains to close the

gap between academic and usual care settings in order to provide effective treatments for youth suffering from mental health disorders.

Implementation research can help close the research-practice gap by providing infrastructure and guidance to improve provision of services in community settings. To help optimize psychosocial treatments in multiple contexts, implementation strategies have been developed to help practitioners use interventions correctly and effectively (Fixsen et al., 2005). Fidelity measurement is proposed as an often overlooked implementation strategy that functions as a quality control indicator for treatment delivery and can facilitate successful EBT use.

Measuring treatment fidelity success may be a crucial step in clarifying whether attenuated treatment benefits are due to poor treatment delivery, ineffective treatment protocol, or other characteristics of the setting (Fixsen et al., 2005; Proctor et al., 2009). Treatment fidelity refers to the degree treatments were delivered as intended (Southam-Gerow & McLeod, 2013; McLeod, Southam-Gerow, & Weisz, 2009) and is composed of three distinct components: adherence, differentiation and therapist competence (Southam-Gerow & McLeod, 2013). Threats to fidelity may interfere with internal validity and confound causal relationships between treatments and client outcomes (Southam-Gerow & McLeod, 2013; Perepletchikova, Treat, & Kazdin, 2007). Despite its importance, treatment fidelity is often measured inadequately in clinical trials (McLeod et al., 2009; Perepletchikova et al., 2007; Weisz et al., 2005), which in turn does not provide adequate guidance for replicating interventions outside of research settings. Research has not yet

identified which therapist level behaviors are necessary for EBT success, and a more nuanced assessment of therapist fidelity patterns is needed before deploying EBTs to ancillary settings (Schoenwald, Chapman, & Garland, 2014).

Fidelity is posited to be a key factor to maintain when EBTs are delivered in community settings to ensure optimal treatments are delivered outside of the contexts they were delivered. Overall, prior research has been inconclusive whether treatment fidelity, or how treatments are implemented as intended plays a key role to improve symptoms improvement (Barber et al, 2006; 2007; Hogue et al, 2008; Huey et al, 2000; Imel, et al, 2011; Loeb et al, 2005; Liber et al., 2010; McLeod et al., 2017; Webb & Barber, 2010). Treatment fidelity has been theorized as an indicator for treatment success, citing that precise treatment fidelity is the key ingredient to producing similar EBT effects in the "real world" as they do in efficacy trials (Breitenstein, Gross, Garvey, Hill, Godd & Resnick, 2010; McLeod, Southam-Gerow & Weisz, 2009; Perepletchikova & Kazdin, 2005; Proctor et al., 2011). However, the link between treatment fidelity and outcomes remains inconclusive. For example, studies have documented community therapists to deliver EBTs with lower adherence and competence than therapists in research trials, but the differences in treatment outcomes were not accounted differences in fidelity benchmarks (McLeod, et al., 2017). Overall across the adult and youth literature, the effect sizes of adherence and competence on outcomes hovers slightly above zero (Webb, DeRubeis, & Barber, 2010), suggesting fidelity does not play a significant role in symptom change. Therefore, this study adds to the knowledge whether treatment fidelity does significantly

contributes to EBT effectiveness and warrants value for future EBT implementation and research efforts.

Understanding the relationship between fidelity and treatment effectiveness may be especially critical to complex systems of care such as juvenile correctional facilities, where effective mental health treatments remain sorely lacking. The rates of mental health disorders among detained juvenile justice youth far surpass community samples; juvenile justice youth are three times more likely to meet criteria for a mental health disorder compared to nondetained peers (Kazdin, 2000, Merkinagas et al., 2010; Shufelt and Cocozza, 2006). Within the juvenile justice system, psychological comorbidity is the norm rather than the exception, with many youth suffering comorbid substance abuse (Shufelt & Cocozza, 2006, Teplin et al., 2002). Due to the high mental health prevalence in correctional facilities, provision of services may be prioritized for youth with serious mental health disorders such as self-harm, psychotic symptoms, and extreme aggressive behavior (Nagel, Guarnera, & Repucci, 2016) leaving many juvenile justice youth with unmet mental health needs.

As many as ninety percent of incarcerated youth have significant history of traumatic experiences, and the link between trauma exposure and severe negative life outcomes is well established (Abram et al., 2004). These youths are more likely to be victims of physical or emotional abuse, community violence, and interpersonal losses (Dierkhising et al., 2013; Ford et al., 2013). Moreover, juvenile justice youth are significantly more likely to be polyvictims exposed to repetitive, continuous traumatic

events leading to long lasting consequences including employment problems, physical health problems, psychological problems, and addiction (Abram et al., 2013). Studies point to a relationship between trauma exposure and future delinquency, although the nature of the relationship is unclear (Buffington, Dierkhising, & Marsh, 2010; Ford, Chapman, Mack & Pearson, 2006). However, the juvenile justice system historically has not responded to youth trauma needs. Correctional facility conditions, such as separation from family and punitive isolation measures, often exacerbate trauma symptoms for adjudicated youth, which in turn compromises youth's ability to participate in rehabilitation correctional programming.

Although effective trauma treatments have been warranted, few have been tested with adjudicated youth in correctional settings. Offering trauma treatments in these settings may be one way to prevent trauma symptoms from interfering with correctional rehabilitation programs, increasing youth chances for successfully reentering their communities. Trauma-focused cognitive-behavioral therapy (TF-CBT) is the most robustly examined EBT for trauma (Cohen & Mannarino, 1996, 1997; Cohen, Mannarino, & Iyengar, 2011; Cohen, Deblinger, Mannarino & Steer, 2004; Cohen Mannarino & Knudsen, 2005; Deblinger, Mannarino, Cohen, Runyon, & Steer, 2011; Deblinger, Mannarino, Cohen, & Steer, 2006; King et al., 2000; Lippmann, & Steer, 1996; Deblinger, Steer, & Lippmann, 1999; O'Callaghan, McMullen, Shannon, Rafferty, & Black, 2013) and has consistently been found to reduce symptoms of posttraumatic stress disorder (PTSD), depression, anxiety, and behavior problems and school problems, even when

implemented in complex community settings. TF-CBT has also demonstrated effectiveness for youth presenting with multiple, complex traumas with ethnically diverse youth from across the globe (Jensen et al., 2013, Murray et al., 2015; O'Callaghan et al., 2013). Examining therapist intervention fidelity is critical for understanding the feasibility and barriers to delivering TF-CBT in correctional settings before a larger scale role out of the intervention. Identifying the unique contributions of critical components of established interventions can improve our understanding of the processes of therapeutic change —and thus enabling implementation of effective interventions that work within the unique contextual factors in the juvenile justice system.

The study examined whether poor fidelity relates to treatment effectiveness. Specifically, this study used observational coding and identified three fidelity components: treatment adherence, treatment or specific therapist competence, nonspecific therapist competence and the association with youth self-reported outcomes. Additionally, this study measured a confound variable posited to enhance treatment fidelity, patient engagement. Patient engagement was measured to determine whether it differentially relates to treatment effectiveness and also whether patient engagement changes the strength of the relationship between treatment fidelity and youth outcomes. A second aim of the study explored whether community therapists are accurate reporters of session fidelity. Specially, the study examined the interrater agreement between observational coders and community therapist self-report for TF-CBT fidelity and reported implementation barriers. Together, the study's

implications elucidate upon the relationship between treatment fidelity and outcomes, contributing knowledge of how to improve upon future EBT implementation efforts.

Chapter 2: Literature Review

Unmet youth mental health needs have warranted national attention and federal support to identify and provide targeted support to at-risk children and to those who already demonstrate symptoms of mental health problems (President's New Freedom Commission, 2003; Institute of Medicine, 2015; U.S. Public Health Service, 2000). One in five children and adolescents (herein referred to collectively as "youth") in the United States—a total of 8.3 million—has a diagnosable mental disorder (CWLA, 2010; Simpson, Cohen, Pastor, & Reuben, 2008). By 2020, adult mental health and substance abuse disorders are estimated to surpass all physical diseases as the major cause of disabilities worldwide, underscoring the critical need to detect and treat mental health symptoms when they begin in childhood (SAMHSA, 2015). Fortunately, psychosocial treatments have been developed to address a broad range of externalizing and internalizing mental health disorders (Chambless & Ollendick, 2001; Weisz & Gray, 2008; Weisz et al., 2004). Well-tested treatments exist to target symptoms of attention deficit hyperactivity disorder (ADHD), depression, anxiety, post-traumatic stress disorder, and disruptive conduct problems, among others (Weisz & Gray, 2008). However, many youth lack access to care, leaving them at risk of poor academic performance, dropping out of high school, and involvement with the juvenile justice system (Golzari, Hunt, & Anoshiravani, 2006; Teplin, Abram, McClelland, Dulcan & Mericle, 2002).

The prolific production of named therapy treatments has spurred the field of psychology to evaluate which treatments actually lead to therapeutic benefit (Chambless

& Hollon, 1998; Chambless & Ollendick, 2001). In 1993, the Task Force on Promotion and Dissemination of Psychological Procedures of Division 12 (Clinical Psychology) of the American Psychological Association formed to determine the effectiveness of psychotherapy interventions. The task force developed criteria to evaluate outcome research trials with regards to their internal and external validity and the extent to which the studies demonstrated that the results were not due to confounding factors such as the passage of time (Chambless & Hollon, 1998; Kazdin, 2002). The committee provided a report that outlined criteria to identify treatments demonstrating proven benefit, referred to as "evidence-based treatments" (EBTs). An EBT is defined as a treatment shown to be more efficacious than the treatment provided to a control group in two or more independent randomly controlled trials. The initial task force included two levels to classify treatment: *well-established* and *probably efficacious*. Well-established treatments demonstrate efficacy by being superior to a pill, placebo, active treatment or equivalent to an already existing efficacious treatment in at least two independent research settings by two independent research teams (Chambless et al., 1998; Chambless & Hollon, 1998; Silverman & Hinshaw, 2008). The purpose of developing evidence-based criteria is to assist therapists in forming their treatment rationale and decisions and guide future research (Southam-Gerow & Prinstein, 2014).

Review of the Evidence for EBTs

At present, the already large number of EBTs for youth continues to rise to address a broad range of mental health disorders (Chambless & Ollendick, 2001; Hoagwood,

Burns, Kiser, Ringeisen, & Schoenwald, 2001; Silverman & Hinshaw, 2008; Weisz & Gray, 2008; Weisz et al., 2004; Weiz et al., 2017). The majority of EBTs are cognitive behavioral therapies (CBT), and they exist for addressing problems of anxiety, depression, conduct and related disorders, attention deficit-hyperactivity disorder (ADHD) and related conditions, and PTSD (Chambless & Ollendick, 2001; Weisz & Gray, 2008; Weisz et al., 2004), among others. Meta-analyses spanning more than four decades of research have found youth psychotherapy to outperform waitlist or control conditions (Casey & Berman, 1985; Kazdin, Bass, Ayers, & Rogers, 1990; Weisz, Weiss, Alick, & Klotz, 1987; Weisz, Weiss, Han, Granger, & Morton, 1995; Weisz et al., 2017). These meta-analyses were broad in their inclusion criteria, including any intervention that mitigates any mental health disorder using any treatment modality except psychopharmacological treatment.

Meta-analyses assess the overall magnitude of all youth psychotherapy outcome research and include an aggregate summary of all outcome studies examining treatment for a broad list of mental health disorders. Meta-analyses measure the effect size (ES), which is the index of the magnitude and direction of treatment effect. The first meta-analysis by Casey and Berman (1985) included 75 studies published between 1952 and 1983 focusing on children aged 12 years and younger. The analysis included outcome studies examining social adjustment (46%), hyperactive or impulsive behavior (13%), phobias (12%) and somatic problems (4%). A total of 64 studies included a treatment-control group, and collectively the mean ES was .71. This effect size indicated that the average treated youth outperformed youth in control groups by two-thirds of a standard deviation. While overall

behavioral treatments outperformed nonbehavioral treatments, the authors noted these differences were confounded by specific outcome measures and target problems specified in behavioral studies. These results were fundamental to challenging critics doubting the benefits of youth psychotherapy.

A second meta-analysis by Weisz et al. (1987) replicated earlier efforts by Casey and Berman (1985) and expanded the sample to include 105 outcome studies including adolescents, focusing on children aged 4 to 18 years. Studies targeted externalizing problems (47%), internalizing problems (42%), and "difficult to classify" problems (0.6%) such as an emotional disturbance. Similar results to Casey and Berman (1985) were found; behavioral interventions (77%) were more effective than nonbehavioral interventions (17%) regardless of client age, therapist experience, or problem type. Overall, the mean effect size was 0.79, suggesting a moderate to large effect for child psychotherapy. A third meta-analysis by Kazdin et al. (1990) examined 223 outcome studies published between 1970 and 1988 focusing on youth aged 4 to 18. Outcome studies focused on externalizing problems (47%), internalizing (16%), learning and academic problems (16%) and both externalizing and internalizing problems (0.3%). Separate effect sizes were found for (a) studies using a treatment control comparison (N=105), (b) studies using a treatment and no-treatment control (N=64) and (c) studies including active control groups (N=41). The ES with the inclusion of active control samples was 0.77 at post-treatment indicating the average youth functioned better than 78% of control group samples treatment.

The most recent meta-analysis expanded on prior efforts and examined psychotherapy moderators including target problem, type of therapy, and control condition. This study examined 447 studies published from 1963-2013 and included over 30,000 youth recruited for research trials, clinically referred to child guidance centers and schools, and youth receiving mandatory treatment. Results found a lower overall effect size (ES=0.46) below the threshold for a moderate effect. Further, effect sizes reduced when psychotherapy was compared to an active control group suggesting psychotherapy may appear more robust in comparison to inert conditions.

More recent meta-analyses address whether treatment effects are specific to the target intervention or if treatment effects are due to an increase in overall wellbeing (Weisz et al., 1995; Weisz et al., 2017). The latter study examined a sample of 150 studies published between 1983 and 1993 focused on children aged 2-18 years. Results indicated psychotherapy effectiveness was more robust for outcome measures matching the target intervention, and therapy gains were not due to general enhancement or overall increased wellbeing from attending therapy. The most recent meta-analyses conducted by Weisz and colleagues (2017) further found therapy impact varied across distinct categories (anxiety, depression, attention-deficit hyperactivity disorder (ADHD), conduct problems, and multiple problems. Notably, the effect size substantially weakened for youth whose primary diagnosis was depression (ES=.29). Conversely to prior meta-analyses, therapy type did not moderate outcome, indicating that behavioral techniques did not out-perform nonbehavioral therapies. Moreover, a nonsignificant ES was found for the effect of

psychotherapy for youth with multiple target problems, suggesting treatments may not benefit youth with complex presenting concerns often treated in usual care settings.

In summary, these aggregate meta-analyses indicate youth in intervention groups outperformed control groups, thereby demonstrating the overall positive effect of youth psychotherapy (Casey & Berman, 1987; Kazdin et al., 1990; Weisz et al., 1987; 1995; 2017). Historically, a larger effect was found for behavioral strategies than nonbehavioral strategies (Casey & Bearman, 1987; Weisz et al., 1987; 1995), but the most recent meta-analyses did not support treatment impact by type of therapy used. The collective effect size of all youth psychotherapy has decreased (Weisz et al., 2017), and 63% of randomly selected youth in a treatment group better off than the control group. Some reasons may be due to newer studies using more active comparison groups such as treatment as usual rather than waitlest controls. Collectively, these studies provide further evidence to dismantling the mechanisms of how treatment works in the real world. Collectively, all four meta-analyses reported mean unweighted effect sizes ranging from .46-.84, within or just below Cohen's (1988) threshold for a large effect (.80). Together, the meta-analyses include over 12,000 diverse subjects spanning over 200 studies, with the positive effects of youth psychotherapy encompassing a large number of treatment modalities and target symptoms (Weisz, Weiss, & Donnenberg, 1992; Weisz et al., 2005).

Use of untested treatments warrants concern. Therapists' use of treatments without demonstrated efficacy raises concern since those treatments' effects are unknown and the treatments may be ineffective. Despite the overwhelming evidence for EBTs, these

interventions are rarely used in usual care (McHugh & Barlow, 2010; Weisz et al., 2014). Usual care includes a wide variety of intervention techniques occurring in diverse settings, including community mental health settings, schools, hospitals, and private practice (Kazdin, 2013). Alarmingly, the majority of youth do not improve across an episode of care in usual care settings, and, in fact, about one third show clinical worsening (Warren et al., 2010; Manteuffel, Stephens, Soundheimer, & Fisher, 2008). Warren et al. (2010) examined treatment trajectories and symptom severity of 936 youth in a public community mental health system and 3,075 youth receiving services through a private managed care system. Almost one third of youth (24%) receiving community mental health and 14% of youth receiving services in managed care experienced symptom worsening. Therapists in both settings reported using eclectic treatment techniques, but the managed care group also reported short-term cognitive-behavioral strategies. Therapy did not impact symptoms for approximately one half of youth, who had no directional change in symptom severity over the course of treatment. This study highlights the need for intervention monitoring in usual care settings to reduce the number of children receiving untested and potentially ineffective treatments.

There is further evidence that untested treatments, as delivered in clinics and community settings, may be ineffective. Weisz et al. (1995) examined all youth outcome research from 1972 to 1995 for clinic-based research and found only nine studies meeting the following criteria: 1) treatment involved clinic-referred youth; 2) treatment was delivered in service clinics, programs, or agencies outside of university laboratories; 3)

intervention was provided by practicing therapists, as opposed to trained researchers; 4) therapy was provided as natural services instead of a research-based protocol; and 5) a study included both a treatment group and a control group that received either no intervention or a placebo. The sobering results found ES values for the nine studies ranged from -0.40-0.29, with a mean ES of (0.01), demonstrating that clinic-based therapy on average was as effective as no treatment at all. Weisz and Jensen (2001) replicated the search by Weisz and colleagues (1995) and identified only four additional studies meeting criteria. The discrepancy of over 500 youth psychosocial efficacy trials in contrast to 14 effectiveness trials, or clinic-based trials, provides support towards increasing efforts examining results of youth treatments in usual health settings. The result was similar to Weisz et al. (1995) in that the effect size across all fourteen studies was -0.01, indicating that usual care treatment provided in clinics had a negligible and sometimes detrimental effect. A randomized trial evaluating the effect of usual outpatient care for high-risk youth in comparison to an academic tutoring control group found little support for usual care effectiveness with an overall effect size of -0.08 (Weiss, Catron, Harris, & Phung, 1999). Similar results were found at 2-year follow-up, demonstrating that child psychotherapy did not produce any delayed treatment benefits (Weiss, Catron, & Harris, 2000). Together, these studies' results demonstrate that usual care therapy does not provide any added benefit. They highlight the need to identify factors that influence psychotherapy where the majority of youth receive mental health services: outside of research trials.

EBTs implemented in usual care generally outperform treatment as usual (TAU) with small to medium effect sizes (Weisz et al., 2006; Weisz et al., 2013). In head-to-head trials comparing EBTs are more effective regardless of client comorbidity and ethnic minority (Weisz et al., 2013). The most recent meta-analyses assessed the effect of 52 studies and showed a mean standardized difference of 0.27. The results persisted at follow-up assessments, indicating that randomly selected youth would more likely have better outcomes after receiving an EBT than usual care treatment. Of note, EBTs did not outperform TAU for youth who met a formal DSM criteria, suggesting EBTs may not be as effective with youth with more serious and complex mental health presentation. While EBT performance is more modest when compared to usual care interventions, their treatment effects are still superior despite the challenges EBT implementation confronts in usual care (Weisz et al., 2013).

Therapists rarely use EBTs. As previously noted, EBTs are rarely used and rarely sustained in everyday practice (Garland et al., 2010; Kazdin, Holland, Crowley, & Breton, 1997). Pignotti and Thyer (2012) conducted a quantitative survey study assessing the use of evidence- based treatments and novel unsupported therapies (NUTs) in a sample of 400 licensed clinical social workers (LCSWs) from 39 states across the United States. Results of this study indicated that an overwhelming majority of LCSWs reported the use of at least one EBT, but three quarters of the sample also reportedly use NUTs in their everyday practice. The findings of the study were limited since the majority of the participants were in private practice, so the results may not be generalized to community mental health

clinics. Survey research depends on self-reporting, and it is not possible to know what interventions therapists use in their everyday practice. For example, a therapist may have reported using EBTs, but adherence to a treatment protocol or which parts of an intervention were used remains unknown. Despite the limitations, this study underscores how NUTs continue to be used in everyday practice and perhaps contribute to the ineffectiveness of usual care (Pignotti & Thyer, 2012).

Studies that have collected observational or chart-review data report that usual care for youth varies widely with regard to types of interventions used, treatment duration, and thoroughness of techniques used during sessions (Borntrager, Chorpita, Higa-McMillan, Daleiden & Starace, 2013; Garland et al., 2010). Usual care has been observed to frequently include a large breadth of both EBT and NUT strategies (Garland et al., 2010). However, the thoroughness of delivering strategies has been found to be negligible, and core EBT components thought to be integral for treatment are often left out (Garland et al., 2010). The lack of depth of EBTs in usual care indicates that EBT delivery may be improved by aiming efforts to train therapists on specific strategies used infrequently and at low intensity (Brookman-Frazee, Haine, Baker Ericzén, Zoffness, & Garland, 2010).

Consistent with observational and chart-review studies, therapist self-reported techniques often do not include EBTs (Borntrager et al., 2013). Borntrager and colleagues (2013) reviewed service providers' monthly treatment and progress summaries. The sample included 814 youth ages 3-19 receiving interventions targeting traumatic stress in a large community mental health system, and 78% of the youth had a comorbid diagnosis.

Therapists reported using evidence-based techniques in 100% of the treatment summaries. However, exposure—a key strategy vital to EBTs for trauma (Chorpita, Daleiden & Wiesz, 2005)—was used intermittently, ranging from only 14-22% of cases. These results indicate that community therapists use EBTs, but they often leave out prescribed techniques required for optimal intervention success. Similar to Garland et al. (2010), therapists delivered both empirically and nonempirically derived techniques with low intensity (Borntrager et al., 2013). In summary, even when EBTs are used in usual care, therapists report that they often pick and choose protocol elements based on personal clinical preference, thus not following the research-based manual (Busa, Bearman & Heier, unpublished), often omit key elements of EBTs and may deliver these interventions below the prescribed dosage.

Conditions of Usual Care Do Not Mirror the Conditions in Which EBTS Were Developed

A longstanding controversy in the youth intervention field is the performance gap between efficacy and effectiveness trials of EBTs (Chambless & Ollendick, 2001; Hoagwood, Hibbs, Brent, & Jensen, 1995; Institute of Medicine, 2014; Kazdin, 1991; 2008; Weisz et al., 1992; Weisz, Donenberg, Han & Weiss, 1995; Weisz & Gray, 2008). Efficacy refers to the benefit of an intervention under the ideal circumstances of a randomized controlled trial (RCT) often occurring in university labs or clinics. The benefit of treatment is determined by reduced symptomology or impairment. Effectiveness refers to the benefit of an intervention in naturalistic settings and conditions, also typically tested

in an RCT. Treatment will typically be delivered in settings such as community health clinics, schools, and private practice, implemented by providers who work in these settings (Hoagwood et al., 1995; Silverman & Hinshaw, 2008). The current model for EBTs first involves the treatment tested under standardized conditions in structured laboratory settings. After two separate RCTs that demonstrate intervention benefit, the interventions are often tested in real world settings with a representative population to determine the external validity (Glasgow, Lichenstein & Marcus, 2003; Weisz et al., 2014). As already noted, when EBTs are transported into more typical settings, their proven benefits from efficacy trials drop (Hoagwood et al., 2001; Weisz et al., 2006, 2013).

The clinical effect of EBTs may be attenuated in terms of benefit as the conditions in which they are tested become more similar to "real world" settings because they were developed and tested in highly controlled conditions (Chambless & Ollendick, 2001; Glasgow et al., 2003; Weisz et al., 2006, 2013). Regardless of the strong evidence base for EBTs in well-controlled trials, the drop in effect as they move into real-world settings—coined the "implementation cliff" (Weisz, et al., 2014, p. 59) leaves us with interventions compromised for external validity (Glasgow et al, 2003; Weisz, 2014).

Client characteristics differ in usual care. The efficacy RCTs that establish the evidence base have typically included clients who do not mirror the complexity of cases seen in usual care (Bearman, & Weisz, 2015; Weisz et al., 1993,1995, 2013). Only 2.1% of all youth were clinically referred in randomized controlled trials published between 1960 and 2009 (Weisz et al., 2013). Clinically referred youth are more likely to have comorbid

disorders and co-occurring problems that require attention and treatment. However, the majority of EBTs have been designed for single problems, meaning intervention protocols may not offer the same results for clients with comorbid disorders (Bearman & Weisz, 2015; Weisz et al., 1992; 2006; Southam-Gerow, Weisz & Kendall, 2003; Southam-Gerow, Chorpita, Miller & Gleacher, 2008). A more recent review of treatment studies spanning from 1994-2009 found only ten controlled trials that even included comorbid clients, highlighting that EBTs have rarely been evaluated with the types of complex cases seen in usual care settings (Riosa, McArthur & Preyde, 2011). Furthermore, treatment is more effective for youth with homotypic comorbidity, disorders among the same diagnostic grouping, than heterotypic problems. Youth and their families in usual care are also more likely to be ethnically diverse, live in single-parent homes, and have lower family income--factors that have been documented to lead to premature therapy termination (Kazdin, 1993) and reduced treatment benefit (Ehrenreich-May et al., 2011; Southam-Gerow et al., 2003; Weisz, Ugueto, Cheron, & Herren, 2013). It is well documented that ethnic minorities are generally not well represented in efficacy trials (Huey & Polo, 2008), which may also influence the impact of EBTs in usual care settings. EBTs effects may not align with cultural values among minority youth and families receiving care, contributing to attenuated benefits.

Therapist characteristics differ in usual care. Therapists in research trials used to test EBTs differ from usual care therapists in their professional experience, training, and educational backgrounds. In research trials, therapists are often doctoral-level therapists or

highly trained and motivated graduate students (Bearman et al., 2013; Weisz et al., 1992; Weisz, Donenberg, Han, & Kauneckis, 1995). On the other hand, therapists in usual care vary in their professional training, with the majority of the workforce comprised of master's level social workers (Hartson, 2008). Lower percentages of graduate social work programs provide EBT coursework and supervision relative to psychiatry and clinical psychology training programs (Weissman et al., 2006), suggesting that this workforce may not receive adequate pre-service training in EBTs. Social workers may learn EBTs in post-service continuing education (CE) workshops, but these workshops rarely impact practice or therapist competence (Beidas, Edmunds, Marcus & Kendall, 2012). Therapists in usual care also have higher caseloads with a broader array of diagnoses than therapists in efficacy RCTs. Therefore, mastering a treatment manual for a single disorder would be inadequate to meet the wide array of symptoms and disorders across clients. Lastly, therapists in RCTs are typically highly trained in the EBT being tested, often at the hands of the treatment developer (Bearman et al., 2013). In contrast, this sort of in-depth training in one EBT is typically not available to therapists in usual care (Weisz et al., 2013).

Organizational characteristics differ in usual care. The success of interventions in complex systems of care depend on systems-level factors such as federal and state policies, insurance policies, and funding programs that impact the effectiveness of interventions in usual care more so than in university laboratories (Glisson et al., 2008). The organizational social climate is comprised of the climate (the way people perceive their environment), the culture (the way "things are done" or social norms in an

organization), and work attitudes (Glisson et al., 2008; Verbeke, Volgering & Hessels, 1998). The organizational social climate in usual care varies greatly from the conditions in laboratory studies and has been shown to have an impact on whether new interventions are adopted and how well they are implemented or sustained (Glisson et al., 2008).

Implementation Research Can Close the Research Practice Gap

The current challenge to close the gap on EBT effectiveness from the lab to usual care is addressed by dissemination and implementation (D&I) research (Glasgow et al., 2003). D&I research is not unique to psychology and is examined across a broad array of disciplines and stakeholders such as agriculture, medicine, and engineering (Peters et al., 2014; World Health Organization, 2013). Little evidence suggests that EBTs are implemented correctly in community settings, preventing suffering clients from receiving beneficial therapeutic EBTs (President's New Freedom Commission on Mental Health, 2003). The role of D&I research as outlined by Southam-Gerow and McLeod (2013) is to (a) identify mechanisms to increase the speed of information transmission and (b) optimize psychosocial treatments into multiple contexts. The goal of implementation is for practitioners to use interventions correctly and effectively (Fixsen et al., 2009; Proctor et al., 2009; Southam-Gerow & McLeod, 2013). Client, therapist, and organizational variables differ greatly from the settings interventions that were developed and tested. These variables cannot be controlled in the real world to make interventions fit (Peters et al., 2014). Researchers need to adjust the interventions and provide supportive infrastructure to better fit client, therapist, and organizational structure. Implementation

research examines how maximizing the capacities of these variables can strengthen their ability to provide high quality interventions within unique contexts.

Implementation strategies are defined as a "systematic intervention process to adapt and integrate evidence-based health innovations into usual care" (Powell et al., 2012, p. 124). They are the specific elements delineated in a treatment protocol. Together, both the intervention components and delivery guide are necessary components for optimal client outcomes outside of academic research settings. The Institute of Medicine (2009) has cited identification, development, and refinement of implementation strategies as one of the highest priorities in the field. Systematic reviews have attempted to dismantle and define intervention strategies (Fixsen, et al., 2009; Perepletchikova, Treat & Kazdin, 2007; Powell et al., 2012), only to unpack varying levels of specification of implementation strategies with inconsistent terminology preventing scientific replication (Michie, Fixsen, Grimshaw, & Eccles, 2009).

Defining an implementation research conceptual model. Implementation of any treatment, policy, or program is a complex, dynamic process involving numerous sequences of activities (Proctor et al., 2011). Exhaustive reviews of D&I frameworks have found 61 named models developed from theory and observation (Tabak, Khoon, Chambers, & Brownson, 2013). An implementation model is a key component to specific relationships between concepts and guide development of research questions. Specific to D&I research, a conceptual model provides a guide to understand processes among various

stakeholders. The remainder of this section will focus on describing the implementation model used to guide the proposed study.

The implementation conceptual model adapted from Proctor et al. (2009, *Figure* 1.) posits that both separate intervention and implementation strategies are required to effectively deliver treatments in usual care. In this model, implementation strategies are classified as targeting multiple, hierarchical levels. Four levels are characterized where implementation strategies can be targeted. The top level targets strategies for external systems, such as policy and financial incentives that provides a guide to leverage policies and financial incentives that may overcome barriers such as high startup costs of EBTs (Proctor, Byron, Powell, & Feely, 2014). The middle two levels, organization and group/team, reflect internal organization champions or environmental factors associated with implementation. For example, an agency's organizational culture can influence intervention acceptance among providers and strong leadership can promote ongoing use of EBT within an organization. The bottom level, individual providers and consumers, addresses how individual therapist behavior influences intervention implementation. Strategies can focus on changing therapist attitudes that impede EBT use (Powell et al., 2012) or providing continuing education training to advance EBT knowledge and skill. This model illustrates the complexity of methods required to advance implementation research while also providing a framework to develop research questions and measure outcomes.

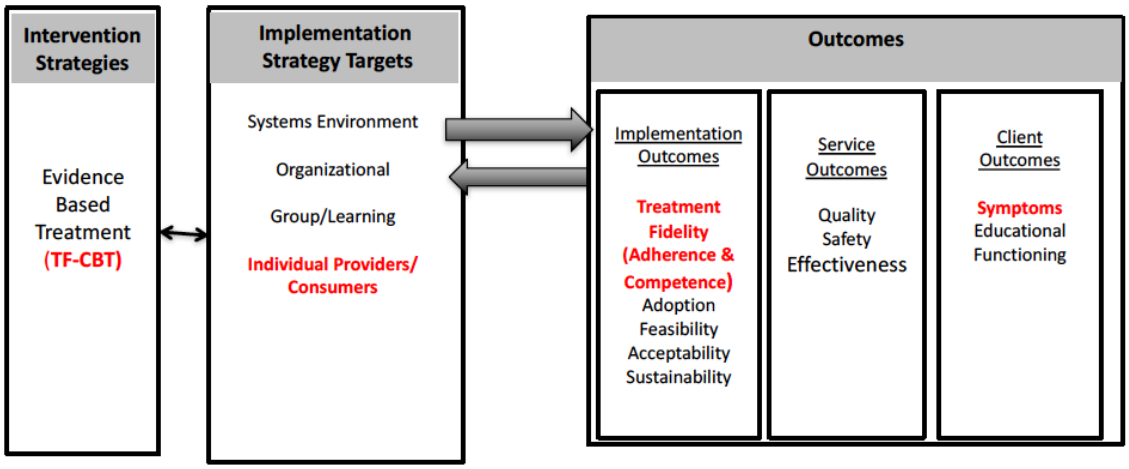

Figure 1. Implementation research model

This figure illustrates the conceptual model of implementation research strategies and their relationship on fidelity and client outcomes. The model is used to guide the development of research questions for the proposed fidelity study. Adapted from Procter et al., 2009; 2011.

Implementation, service, and client outcomes. An important distinction within this model is the difference between implementation, service, and client-level outcomes. The model distinguishes three distinct but correlated outcome levels: implementation, service, and client. Client outcomes include symptomology, educational, and functional outcomes (peer relationships, employment, quality of life, and etc.). Service outcomes, or quality improvement aims, include the efficiency, safety, effectiveness (how well treatment works), timeliness, patient satisfaction or treatment acceptability, and patient- centeredness of an intervention. Implementation outcomes include acceptability (perception of intervention among stakeholders), adoption (decision or intention to use an EBT), appropriateness (perceived fit of EBT), feasibility (extent the intervention can be conducted within the setting), fidelity (degree EBT was delivered as intended), penetration (degree that the an EBT can be integrated and delivered within a service system), and sustainability (extent intervention maintained) (Peters et al., 2014; Proctor et al., 2011). Implementation research requires measurement and evaluation of outcomes at all three levels (implementation, service, client), to understand if the treatment was not effective due to faulty intervention or poor delivery (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Perepletchikova & Kazdin, 2005; Proctor et al., 2011). If an intervention is not delivered using the same model as research trials, reduced effectiveness may be due to poor implementation and not due to faulty interventions. Assessing implementation strategies at each level of the model can help discern meaningful parallels between specific strategies.

An implementation outcomes framework allows researchers to compare which specific implementation strategies demonstrate success for adapting EBTs in the real-world (World Health Organization, 2014). A current implementation model posits that both intervention and implementation strategies are required to effectively use an intervention outside of laboratory settings. Implementation strategies can target multiple, hierarchical levels from higher systems such as funding to lower systems, or individual therapist behaviors (Powell, Proctor & Glass, 2013; Proctor et al., 2009). Specific implementation outcomes must be measured to evaluate the effectiveness of these implementation strategies. Implementation outcomes are distinct from service and treatment outcomes (Fixsen et al., 2005; Proctor et al., 2009). Reviews of implementation research have identified and conceptualized eight key implementation outcomes, including acceptability or perceived fit and sustainability or ability to continue intervention. Stakeholders can evaluate implementation outcomes to determine if insignificant changes in client or service outcomes were due to ineffective treatment or flawed intervention implementation (Proctor et al., 2009; 2011). However, researchers still need to evaluate each part of the model before deploying it in the real-world. Premature deployment of the model without rigorous testing could inadvertently lead to implementation failure of effective EBTs.

Treatment Fidelity is a Critical Implementation Outcome

One implementation outcome, treatment fidelity, refers to the degree to which a treatment was delivered as intended (McLeod et al., 2009; Southam-Gerow & McLeod, 2013). "Treatment fidelity" is synonymous with "treatment integrity" and used

interchangeably in research (McLeod et al., 2009; Perepletchikova & Kazdin, 2005). The three components of fidelity are defined as follows: adherence refers to the extent which treatment was delivered as prescribed in a written protocol or manual; differentiation refers to the extent a therapist deviates from treatment protocols*;* and therapist competence refers to the level of skill and judgment level of the therapist when delivering an intervention (Fairburn & Cooper, 2011; McLeod et al., 2009; Perepletchikova, Treat & Kazdin, 2007; Schoenwald et al., 2011; Southam-Gerow & McLeod, 2013; Waltz, Addis, Koerner, & Jacobson, 1993). The level of skill and judgement refers to the extent therapists consider both the specific, technical aspects of the intervention and also consider nonspecific factors, such as responding to the client's current stressors and current level of impairment (Waltz, Addis, Koerner, & Jacobson, 1993).

Inadequate treatment fidelity measurement poses a threat to internal, external, construct, and statistical validity. For example, treatment fidelity measurement is critical to evaluate so that appropriate inferences and relationships between treatment and outcomes can be determined (Southam-Gerow & McLeod, 2013; Perepletchikova et al., 2007). The intervention findings cannot be generalized to other settings without knowing how the intervention impacted dependent variables. Compromised fidelity negatively impacts the construct validity of the intervention because it cannot be determined what the intervention was and how effects were produced. Finally, the statistical conclusion validity is compromised when interventions are not delivered as intended. Unsystematic error could

be introduced and consequently increase within the group variability, leading to reduced effect sizes and statistical power (Perepletchikova et al., 2007).

Treatment fidelity has been defined as an important factor in clinical research, yet few clinical trials adequately report fidelity processes for replication (McLeod et al., 2009; Perepletchikova et al., 2007; Weisz et al., 2005). An examination of the full youth psychotherapy literature (N=236 studies) published between 1965 and 2002 found that only approximately half of the studies reported use of a treatment manual, and only one third of the studies reported consultation or adherence checks. This finding suggests treatment may have not been delivered as intended (Weisz et al., 2005). Another study evaluated treatment fidelity from studies in six top impact-factor psychology and psychiatry journals (Perepletchikova et al., 2007). All studies were reviewed and scored using a measure to evaluate how the studies established, assessed, evaluated and reported fidelity and also whether the studies reported therapist adherence and therapist competence. Overall results indicated that only 3.5% of studies implemented fidelity procedures adequately. Treatment adherence was only implemented adequately in 8.9% of studies, with approaching adequacy in 39.1% and inadequate implementation in 52% of studies. Results for the measurement of therapist competence were similarly low, with 87.1% of procedures implemented inadequately, 11.4% with approaching adequacy, and 1.50% adequately. Failure to measure treatment fidelity poses a threat to interpretations of the validity of findings. Inaccurate fidelity assessment leaves a critical unanswered question: whether treatments are not effective in usual care (treatment failure) or whether they are

not properly implemented (implementation failure) Proctor et al., 2011). Threats to fidelity may be one reason why interventions do not provide benefits when transported to real-world settings.

Fidelity measurement. Researchers have prioritized development of fidelity measurement tools to understand whether treatment failure is due to poor delivery in usual care. Fidelity measurement involves maintaining both scientific validation and usefulness of fidelity measurement in usual care (Schoenwald, 2011; Schoenwald, Garland, Chapman, Frazier, Sheidow, & Southam-Gerow, 2011). Upholding the balance between effectiveness and efficiency is particularly crucial in usual care settings where measures must be both psychometrically sound and also easy and quick to use (Schoenwald et al., 2011).

Prior research trials have used both indirect and direct ratings of therapist fidelity (Schoenwald, Garland, and Chapman et al., 2011). Examples of indirect measures include therapists providing a review of session content with clients, written homework sheets, and therapist self-report checklist measures (Perepletchikova et al., 2007). Direct measures include collaborative efforts of external consultants to observe treatment either in-vivo or through audio or video recordings. For example, therapist self-report measures are both efficient and can also provide immediate fidelity feedback; However, these tools are likely not to report accurate fidelity information (Hurlburt, Garland, Nguyen & Brookman-Frazee, 2010). A current challenge remains: balancing the utility of fidelity measurements in fast-paced usual care settings with psychometrically sound, valid instruments. The

following section will focus on the most widely used fidelity measurement methods, therapist self-report rating scales, and direct observational coding.

Observational coding fidelity measures. Observational coding has been considered the "gold standard" of fidelity measurement (Hogue, Liddle, & Rowe, 1996) and the most widely used fidelity measurement tool (Schoenwald & Garland, 2012). It provides a more nuanced view of treatment delivery and can include the frequency counts of specific interventions (dosage), intensity, timing, and ratings of extensiveness and skillfulness of treatment delivery processes and techniques, and ratings of therapeutic behaviors including the therapeutic alliance (Garland et al., 2010; Hogue et al., 2008; McCleod & Weisz, 2010). For example, observational protocols can code for whether a prescribed technique was present (yes/no) and also the degree to which the therapist was adherent on a Likert scale (not adherent to very adherent). Observational coding can also capture nonprescribed techniques that may dilute the effectiveness of the intervention.

Although observational coding requires extensive time and resources, it yields more objective fidelity measurement. The laborious efforts for observational coding include developing a measurement tool that matches treatment components, training and hiring coders, coding therapy sessions, resolving coder disagreement to maintain high rater reliability, and data analysis (Schoenwald et al., 2011). Coders must also be well trained in the treatment protocol and able to capture nonproscribed treatment elements that therapists may not report (Dunsbury et al., 2003). Without this information, treatment effects may disguise contextual information, leading to incorrect conclusions on treatment benefit.

While observational methods prove costlier and time consuming, they can capture all three fidelity aspects, which may provide more useful information of why a treatment works or not outside of clinical trials.

Therapist self-report fidelity measures. Therapist self-report fidelity measures are obtained at the completion of therapy sessions (Schoenwald and Garland, 2012) and have several advantages over direct fidelity measures. Whereas observational data only codes a select number of sessions, the majority of therapist self-report fidelity measures can easily be administered after each therapy session (Shoenwald & Garland, 2012). Therapist self-report measures can be scored quickly to provide immediate feedback to therapists on their performance. Self-report fidelity measures can be easily used by therapists in usual care where the adoption of EBTs remains slim (Hogue, Dauber, Henderson, & Liddle, 2013). The ease and fit of self-report fidelity measures in routine care may increase their use, increasing EBT quality control.

Despite self-report utility, their correspondence to actual session content from nonparticipant observational raters remains mixed. Hurlburt and colleagues (2010) compared adherence information from observational coders and community outpatient therapist self-report fidelity measures. Results concluded that therapist self-reports recorded 2.5 more goals and strategies per session than were identified with observational coding. Therapist also provided positively biased reports of the frequency and intensity of treatment components. These results are important because therapists who perceive themselves as already covering intervention content may stop further efforts to develop

vital skills with a client (Hurlburt et al., 2010). Other research has found contradictory results, finding therapist self-report to be valid and reliable in comparison to observation coding (Hogue, Dauber, Henderson & Liddle, 2013). For example, in a research trial implementing manualized family therapy for youth at risk for substance abuse, therapist self-report fidelity ratings reliably mapped with observational codings for treatment targets (e.g. who was the target of treatment in family therapy) and session goals (Hogue et al., 2013). Results also found that therapists did not overestimate their time spent on session content. However, the therapists were trained research staff who received on-going monitoring throughout treatment. Therefore, these results may not generalize with community therapists.

Conversely, community therapist fidelity self-report has also been found to match the fidelity reporting of trained coders and national experts; however community therapists still report implementing more overall treatment components (Chapman, McCart, Letrourneau & Sheidow, 2013). In aggregate, these results suggest that therapists can reliably report which components they implement, but they fare less well in reporting the accuracy of how much of an intervention they delivered.

In summary, independent observational coders and therapists often have different perceptions of in-session fidelity. Overall, observational coding has been found to capture accurate and valid information about the amount of time devoted to specific skills (Hurlburt et al., 2010). Some research suggests that therapists who receive training and ongoing supervision can accurately report treatment adherence, but therapist overreport the

thoroughness of treatment delivery (Hogue et al., 2013; 2015). While observational coding has been found to be more reliable, the labor-intensive process is not effective for everyday practice where fidelity feedback is needed quickly to sustain EBTs. In order to further disseminate EBTs in community settings, we need to understand how to best monitor fidelity in a manner that matches the pace of usual care and efficiently provide useful real-time feedback on intervention delivery.

Implementation support is one strategy to increase fidelity. Implementation support methods are one characteristic of efficacy trials that could increase therapist fidelity and help equalize EBT performance in usual care. The current ‘‘gold standard’’ of training in EBT includes a workshop, a treatment-specific manual, and clinical consultation (Sholomskas et al., 2005). Roth, Pilling & Turner (2010) found that “exemplary” CBT efficacy trials included model-specific pretrial training, ongoing model-specific consultation during the trial, use of a treatment manual, and measurement and monitoring quality assurance indicators of treatment fidelity. Furthermore, the training in clinical trials includes didactic presentations, video case examples, and behavioral role-playing. Prior to starting the research trials, therapists were also required to demonstrate competency with pilot cases. Fidelity checks were a common component in efficacy trials. The authors concluded that EBTs should be packaged as comprehensive packages of consultation and training in addition to the manuals alone.

Evidence suggests that high-quality training should include “active” and “passive” components (Beidas & Kendall, 2010; Garland & Schoenwald, 2013). “Passive”

components include didactic lectures on treatment content and observations of role-play videos, while "active" learning components include necessary skill modeling, behavioral role plays, and practices cases (Beidas & Kendall, 2010; Fairburn & Cooper, 2011). Key components of "active training" should include coaching and feedback for therapists. Training in EBTs has been found to influence therapist knowledge, attitudes and perceived behavior about EBTs (Fixsen et al., 1995; Garland & Schoenwald. 2013). Time-limited, discrete training such as the typical workshops used for continuing education credits alone do not result in behavioral change and proficient treatment delivery (Beidas & Kendall, 2010).

A second critical component for ensuring treatment fidelity includes ongoing consultation and quality assurance such as fidelity monitoring with feedback. Comprehensive meta-analysis of the child and adolescent outcome literature lends strongest empirical support for consultation and fidelity monitoring (Novins, Green, Legha & Aarons, 2013). However, consultation is often not included in dissemination efforts when transporting EBTs to usual care (Sholomska et al., 2005). While training and tools are critical components for effective EBT delivery, alone they do not elicit behavioral change in therapist practice (Wandersman et al., 2012; Beidas & Kendall, 2010; Beidas et al., 2012; Roth et al, 2010). Ongoing consultation provides the opportunity for therapists to clarify skills, practice skills over time, receive coaching, and problem-solve barriers to treatment implementation (Fixsen et al., 2005; Beidas et al., 2012; Schoenwald, Mehta, Frazier & Shernoff, 2013).

In support of ongoing therapist monitoring during treatment, results from a trial examining three training modalities for cognitive behavioral therapy (CBT) for substance abuse found that community therapists who received consultation, didactic training, and a manual demonstrated higher levels of CBT adherence and skills when performing a behavioral role-play than therapists who received only training and manual or manual alone (Sholomkas et al., 2005). While therapists in the training and manual condition had higher scores on adherence and skill than the manual-only group, these results were not statistically significant. This indicates that consultation is a key component for behavioral change. The study observed community-based therapists and provided some evidence that training strategies from efficacy trials can be implemented in usual care. An RCT evaluating three separate training techniques significantly increased fidelity for an anxiety-based EBT with post-training consultation. Even though consultation was not part of the randomized design, each hour of consultation post-training improved therapist adherence by 0.40 points and skills by 0.30 points on a seven-point scale (Biedas et al., 2012). Fidelity measurement, including adherence and skills, continued to improve at follow-up, which is noteworthy since studies utilizing only training strategies have demonstrated only minimal or even declining adherence scores at follow-up when consultation was not provided (Beidas et al., 2012; Sholomkas et al., 2005). Taken together, these results indicate that ongoing consultation and feedback can maintain treatment proficiency and improve therapist adherence and competence.

Relationship between therapist fidelity and outcomes. While research supports that therapist behavior and fidelity can be enhanced by rigorous training and ongoing consultation, we are unsure whether training efforts to improve fidelity has substantial clinical effect on improved intervention success. Although fidelity has been theorized as a key mechanism for implementation success, studies examining the link between fidelity and client outcomes have found mixed results (Barber et al., 2006; Becker, Becker, & Ginsburg, 2012; Boswell et al., 2013; Campos-Melado, Smith, Meyers, Godley, & Godley, 2017; Liber et al., 2010; Loeb et al., 2005; McLeod et al., 2017; Perepletchikova & Kazdin, 2005; Webb et al., 2010). A meta-analysis examining the relationships between therapist adherence /competence and patient posttreatment outcomes in the adult and youth psychotherapy literature found the variability in adherence and competence was close to zero (Webb, DeRubeis, & Barber, 2010). However, the authors noted the failure to find significant positive relationships between competence and adherence may be accounted for by therapist responsiveness. If a client does not respond to treatment or experiences symptom worsening, the therapist may adapt his or her intervention to the client context, thus not abiding to the proscribed protocol. Additionally, only two of the studies spanned the youth literature and which both had contrary results.

The majority of evidence supporting treatment adherence as a key mechanism for reductions in youth mental health symptoms comes from research on family interventions with delinquent youth. For example, the adherence to multidimensional family therapy (MDFT) and individual cognitive behavioral therapy for adolescents with substance use

predicted declines in substance use and externalizing behavior (Hogue et al., 2008). Notably, moderate adherence levels led to greatest declines in externalizing behaviors, suggesting that therapists who were both too rigid and too flexible to a treatment protocol were least effective. Adherence to multisystemic therapy for juvenile offenders found an indirect relationship between adherence and lower youth reported externalizing problems. Higher adherence was associated with improved family and social relationships , which in turn was related to lower juvenile delinquency (Huey, Henggeler, Brondino, & Pickrel, 2000).

Conversely, several studies have not found any relationship between treatment adherence and treatment outcomes. Treatment adherence in RCTs examining cognitive behavioral therapy and interpersonal therapy (ITP-A) for adolescents with bulimia found high levels of adherence across treatment, yet higher adherence did not predict treatment effectiveness (Loeb et al., 2005). Similarly, higher treatment adherence did not predict treatment effectiveness in cognitive behavioral therapy for adults with panic disorder (Boswell et al., 2013), cognitive behavioral therapy for youth with anxiety disorders (Liber et al., 2010), and modular cognitive behavioral therapy for adults with anxiety disorders (Becker et al., 2012).

Studies are also mixed whether higher therapist competence is related to treatment effectiveness (Barber et al., 2006; Campos-Melado, 2017; Hogue et al., 2008; Imel et al., 2010; Perepletchikova & Kazdin, 2007). Some research has found higher therapist competence relates to lower youth posttreatment symptom severity (Campos-Melady,

2017), whereas others have not identified a relationship between treatment competence and outcomes (Barber et al., 2006; Hogue et al., 2008; Webb et al., 2010). The reasons for the inconsistent results between therapist competence and outcomes may be due to a few reasons. First, fewer studies with fewer participants have been published examining the relationship between competency and treatment effectiveness (Webb et al., 2010). Relatedly, the effect of competence on outcomes may be small, and thus inadequate power of study samples makes difficult for quantitative methods to detect significant relationships. Taken together, these results suggest that the current state of research is unclear whether treatment fidelity leads to therapeutic change.

The relationship between fidelity and outcomes is less conclusive when controlling for third variables, including therapeutic alliance (Barber et al., 2006; Melado-Campos, 2017; Liber et al., 2010; Loeb et al., 2005). Overall the effect of the therapeutic alliance alone is robust and associated with positive treatment outcomes (Shirk & Karver, 2003). The main question researchers have not yet answered is whether the alliance significantly enhances fidelity. Barber and colleagues (2006) examined therapist adherence, competence, and alliance in predicting outcomes of individual drug counseling, and found the alliance served as a moderator. For example, when the alliance was rated as strong, there was not a relationship between adherence and treatment outcomes, whereas when alliance was weaker, higher adherence predicted better outcomes. In fact, when therapists are not adherent to the protocol, but have a strong alliance, may reflect therapists responding more appropriately to an individual patient's needs.

Summary. Implementation strategies target how to improve treatment delivery in routine settings where clients, therapists, and settings differ from randomized controlled trials. Increasing treatment fidelity, has been indicated as one key implementation strategy that can be enhance the success of EBTs in usual care (Perepletchikova & Kazdin, 2005). (Schoenwald & Garland, 2013). Researchers posit that improving and monitoring treatment fidelity in the community will improve EBT effectiveness. In fact, many efforts have been made by researchers and EBT developers to improve treatment training, increase ongoing consultation, and provide continuous fidelity monitoring for therapists in community settings. However, research remains inconclusive whether higher therapist fidelity relates to treatment effectiveness, and efforts to improve therapist fidelity may have little clinical utility. Understanding the link between fidelity and treatment effectiveness is especially important for future EBT implementation efforts and EBT success in complex systems of care where youth receive services. Next, we discuss why juvenile justice contexts are one place to examine fidelity to yield positive emotional, behavioral outcomes for youth at risk for ongoing delinquent behavior.

Mental Health Prevalence Within the Juvenile Justice System

Youth psychopathology is one risk factor for juvenile delinquency, and the consequences of mental health disorders for delinquent youth are substantial. Youth who enter the juvenile justice system often have mental health needs that have been undiagnosed and untreated. Offending behavior peaks in the teenage years between 15 and 19 (Piquero et al., 2007), and adolescence is also when youth typically experience onset of mental

health symptoms (Merikangas et al., 2010). For many youth, rule-breaking and delinquent behavior may be a result of mental health symptoms that further weaken already impaired decision making, which together put youth at higher risk for delinquent behavior (Grisso, 2006). Additionally, youth mental symptoms often interfere with their engagement in correctional programming, leading many youth to remain locked in the juvenile justice system. Some researchers have posited that youth are placed in the juvenile justice system to access appropriate care; however, the juvenile justice system was not designed to treat psychiatric disability and is ill-equipped in regards to specialized staff and programs for mental health treatment (Grisso, 2008). The juvenile justice system is currently working towards both increasing public safety and its treatment of mental health; thus warranting research to test which psychological interventions will both fit with the organizational structure and also benefit the youth embedded in the system.

The following section will focus on describing the unmet mental health needs of youth in the juvenile justice system. For the purpose of this overview, key terms are defined. Within the juvenile criminal justice system, "delinquency" broadly describes children and adolescents who have broken a law. The term was created to iterate the juvenile court's role to provide redirection and rehabilitation whereas the adult court was focused on punishment and retribution (Grisso & Riggs Romaine, 2012; Platt, 1977). It also includes "status offenses," which are behaviors illegal only for individuals under the age of 18, such as running away or possession of alcohol (Waldman & Lahey, 2008). Delinquency can range from minor offenses such as possession of alcohol to a severe,

violent offense such as homicide. "Disruptive behavioral disorders" refers to the three behavioral mental health disorders: conduct disorder (CD), oppositional defiant disorder (ODD), and attention deficit-hyperactivity disorder (ADHD) as defined by the DSM-V (APA, 2013) diagnostic criteria. The term "disruptive behavioral disorders" is a composite used on the Diagnostic Interview Schedule for Children (DISC, Shaffer et al., 1996), which is the most widely used measures in mental health research and prevalence studies. CD is characterized by a "repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate society norms are violated" (DSM-V; American Psychiatric Association, 2013, p. 472), and three out of fifteen specific behaviors such as physical aggression to people or animals, destruction of property, stealing, or violating rules must be present in the prior 12 months for a youth to be diagnosed with CD. ODD partially overlaps with CD (Krueger, Markon, Patrick, & Iacono, 2005; Lahey, 2008) and is diagnosed when youth engage in four disruptive behaviors in the prior month. Some key behaviors for diagnosis include defiance, arguing with adults, and exhibiting vindictive or spiteful behavior (American Psychiatric Association, 2013). Researchers agree that CD and ODD are not two dichotomous disorders, which exist with the presence of a certain number of symptoms, but rather exist along a continuum (Boyle et al., 1996; Lahey et al., 2008; Loeber, Burke, Lahey, Winters, & Zera, 2000), with more symptoms related to increased severity of impairment.

Effective psychological treatments are needed in the juvenile justice system, where the rates of mental health diagnoses surpass those in nonincarcerated youth. Estimates of

the prevalence of psychiatric disorders among youth indicate that 50-70% experience at least one diagnosable mental disorder (Cocozza & Skowrya, 2000; Teplin, Abram, McClelland, Dulcan & Mericle, 2002; Wasserman, McReynolds, Lucas, Fisher, & Santos, 2003; Wasserman, McReynolds, Ko, Katz, & Carpenter, 2005), which is three times higher than the rate in the general US population (Merikangas et al., 2010). Results from a study examining mental health rates using structured interviews across over 9,000 youth in three levels of juvenile services (system intake, detention centers, and residential correctional facilities) found that more than half of those youth had an identified mental health disorder (Wasserman, McReynolds, Schwalbe, Keating, and Jones, 2010). From the sample, 20% experienced an anxiety disorder, 7.9% experienced an affective disorder, 27.1% experienced a disruptive behavior disorder, and 34% experienced substance abuse disorder. Most disheartening, almost 14% reported lifetime suicide attempts, which is three times higher than the rate found in adolescent community samples (Nock, et al., 2013). Of course some might object that the high rates of psychiatric disorders may be due to substantially higher prevalence of conduct disorder and substance abuse among juvenile populations. Nevertheless, a multisite prevalence study sampling over 1,400 youth found that 66% of youth still met criteria for one diagnosable mental health disorder when removing conduct disorder from analyses (Shufelt & Cocazza, 2006). Adding to the evidence — approximately half of the youth (45%) in the sample were still identified as having a mental health disorder when discounting both conduct disorder and substance abuse. These

aggregate studies all indicate higher mental health disorder prevalence for juvenile justice youth and reminds us of the importance of developing and testing interventions.

Comorbidity. Within the juvenile system, psychiatric comorbidity is the norm rather than the exception. The National Center for Mental Health in Juvenile Justice Study examined diagnosable mental health prevalence across three states (Louisiana, Texas, and Washington) and also across multiple domains of care (community, short term detention, and residential placements) using diagnostic interviews (Shufelt & Cocozza, 2006). Results found that more than 50% of youth met criteria for two or more diagnoses, and two thirds met criteria for three or more mental health disorders. Moreover, convergent findings indicate that substance abuse disorders most commonly coexist with another mental health disorder (Shufelt & Cocozza, 2006; Teplin et al., 2002; 2013 Wasserman et al., 2010). Substance abuse and mental health disorders can occur independently of each other, or more commonly, they can interact and exacerbate symptoms (SAMHSA, 2002). This in turn, leads to unique patterns of behavior, preventing youth from functioning and interfering with intervention efforts. Accordingly, substance abuse behaviors and comorbid mental health issues lead to substantial risk for poor outcomes. For example, these youth are at higher risk for suicide attempts, recidivism, and overall impaired functioning (Wasserman et al., 2010). Substance abuse severity has been found to increase with co-occurring internalizing disorders. Few programs have been developed to treat both substance abuse and mental health issues simultaneously for youth (Teplin et al., 2002).

Research has found youth with comorbid behavioral and emotional problems are at the highest risk for future delinquent behavior (Copeland et al., 2007). A study examining a statewide cohort of adolescent females involved in the juvenile system (N=738) found significant differences in age of arrest, frequency of arrests, and severity of charges between females receiving public mental health case management in comparison to female youth without any record of public mental health services (Davis, Fisher, Grudzinkas, & Banks, 2009). After controlling for age of first arrest, females with mental health needs experienced higher frequency of lifetime charges for violent offenses, moderate offenses like burglary or larceny, and minor public nuisance charges. These results indicate that females with mental health needs are more likely to first come in contact with the system at an earlier age, to interact with the system more frequently, and to be charged with more serious offenses. Correctional programs have identified the need to develop programs to address the needs of delinquent youth with co-occurring disorders; however, far less is known of effective services for treatment. In sum, many juvenile detainees experience substantial psychiatric comorbidity that if left unaddressed can lead youth deeper within the legal system.

Gender differences in mental health rates. Gender differences among rates of psychiatric illness exist among youth inside the juvenile justice system. For example, at probation intake Wasserman et al. (2005) found that 49.5% of females in comparison to 45.7% of males met criteria for at least one diagnosable DSM-IV disorder. Evidence exists that rates of internalizing disorders, ODD and suicidal attempts are greater among

delinquent girls than delinquent boys (Loeber & Keenan, 1994; Teplin et al., 2002; Wasserman et al., 2005; 2010). Additionally, in the past ten years there has been an increase in the percentage of females and a corresponding decline in males within the juvenile justice system. Females are more likely to be arrested for domestic violence and family rule breaking (Gavazzi, Yarchek, & Chesney-Lind, 2006) and status offense (Snyder & Sickmun, 2006) whereas males are more likely to be detained for serious, violent offenses. The disproportionate prevalence of females with psychiatric disorders in the system is a concern since female youth are at a higher risk for entering the juvenile justice system for less serious offenses than males (Espinosa, Sorensen, & Lopez, 2013), and their mental health needs may interfere with reentering their communities.

Impact of untreated mental health for juvenile justice youth. Untreated youth mental health disorders are strongly associated with future adult crime and incarceration. Copeland and colleagues (2007) followed a nationally representative sample of youth from the Great Smoky Mountains Study (Costello et al., 1996) at age 9, 11, and 13 annually up to age 16 for psychiatric disorders, and they also examined criminal involvement from court records at ages 16 through 21. Even with the exclusion of conduct disorder, both males and females with any psychiatric diagnosis were twice as likely to have adult criminal involvement compared to individuals without any childhood mental health disorder. Overall, the proportion of adult crime attributed to childhood mental health was approximately 20% for males and 15% for females after controlling for poverty level and offense severity. Older youth with mental health disorders (ages 14-17) are at particular

risk of being sentenced and waived to the adult criminal system for more serious crimes. In data from the New Jersey Department of Corrections (NJ DOC) from 2007-2015, two out of three children analyzed had two or more mental health diagnoses, highlighting community failure in providing treatment (Wright, Rodrigues, & Rosario, 2015). More often than not, youth with mental health disorders within the NJ DOC system were placed in solitary confinement, leading to further psychological damage. These discouraging and unjust outcomes have ignited a call to action among stakeholders to develop community intervention efforts in lieu of sending youth to adult incarceration, where their chances to rejoin the community appear unlikely.

Despite the aforementioned prevalence of psychiatric illness therein, correctional facilities are not always equipped with enough trained staff to provide effective treatment to meet the complex mental health needs. Although the juvenile justice system acknowledges that necessary psychological treatment is a top priority, implementation of mental health services requires aligned efforts of multiple agencies across policy and practice. One barrier to care has been lack of appropriate screening and assessment of mental health disorders (Cocozza & Skowrya, 2000). Concerted efforts have first targeted developing quick and reliable screening assessments to administer to youth at the earliest point of contact in juvenile justice systems (Grisso, Barnum, Fletcher, Cauffman, & Peuschold, 2001). While universal screening instruments have been developed and used across individual states, the system currently lacks development of appropriate, effective services for identified youth. Many states now recognize the need for developing effective

EBTs for youth in correctional programs both at the community and residential level (Skowra & Cocozza, 2006). In fact, the National Center for Mental Health and Juvenile Justice recommends that all youth involved in juvenile justice systems should have access to EBTs in all settings, but the lack of trained staff that can deliver mental health services within an integrated system confounds such treatment. Additionally, trained direct-care service providers in residential correctional centers are unprepared to work with youth experiencing mental health symptoms. Staff often use punitive measures or ineffective behavioral strategies, such as restraints or extended isolation, which only leads to the worsening of mental health symptoms including aggression. Currently a wide gap in the research exists for the effectiveness of models and services. The research shows that mental health disorders are a risk factor for youth and adult involvement in the legal system, so treatment is crucial to help prevent future offenses.

EBTs for juvenile justice youth. Recent efforts by the Blueprints for Healthy Youth Development project in collaboration with the Office for Juvenile Youth systemically identified and reviewed the evidence base for youth interventions that reduce antisocial behavior and delinquency. Results of a review of over 600 programs found only three effective psychological interventions for justice-involved youth, including Functional Family Therapy (Alexander & Parsons, 1973), Multisystemic Therapy (Heneggler, Schoenwald, Borduin, Rowland, & Cunningham, 1999), and Multidimensional Treatment Foster Care (Chamberlain, 2003). Moreover, these programs are delivered in the community highlighting a paucity of model evidence-based treatment programs for

residential settings. The establishment of effective EBTs for youth in residential programs has not been well established. Juvenile justice youth critically need effective EBTs, because mental health treatment may help mitigate risk factors and reduce future risk for delinquency and incarceration.

Despite widespread dissemination, only one RCT has implemented TF-CBT in residential treatment facilities (RTF) where adjudicated juvenile justice youth resided for treatment (Cohen et al., 2016). The study was conducted in eighteen RTFs in the New England area, and the RTFs served adjudicated youth ages 13-18. Due to the demand of traumatized youth in RTFs, the primary aim examined cost-effective strategies for training therapists in TF-CBT. Researchers compared differential treatment outcomes for TF-CBT delivered by therapists who received a) web-based training and consultation or b) web-based training, two-day in-vivo didactic and experiential training workshop, and twice monthly phone consultation for 12 months with an expert trainer. Therapists were randomly assigned to each condition. Results found that therapist who received the web-training, in-vivo training, and ongoing consultation screened youth more often for trauma exposure, implemented TF-CBT with higher fidelity, and had fewer youth drop-out of treatment than therapists who only completed the web-based training. Youth in both conditions experienced significant improvement in PTSD symptoms and depressive symptoms suggesting TF-CBT could be successfully implemented with adjudicated youth in residential centers. However, in contrast to other effectiveness trials, PTSD improvement was lower, and 37% of youth continued to meet full criteria for PTSD.

Researchers reported several barriers at the youth level, particularly to treatment engagement, which may be increased by a therapist's use of nonspecific factors, such as warmth and tasks related to the therapeutic alliance. Additionally, this trial relied on therapist self-report fidelity checklists rather than observer ratings. These results support the need to better understand implementation barriers for adjudicated youth, such as identifying treatment fidelity in order to better understand the challenges of implementing TF-CBT in residential correctional facilities.

Trauma Exposure Among Juvenile Justice Youth

Trauma exposure is a common experience among juvenile justice youth, which requires concerted efforts among mental health, juvenile justice, and policy systems to provide effective trauma treatment within correctional settings. Approximately 75% of youth in the juvenile justice system have experienced at least one traumatic event (Abram, et al., 2004; Cauffman, Feldman, Lochman, Waterman, & Steiner, 1998; Sedlak & McPerson, 2010; Steiner, Garcia, & Matthews, 1997). Evidence from a large (N=1829), ethnically diverse sample in Cook County, IL, suggests even higher trauma exposure; 86% of detainees had experienced more than one trauma, and 56% had been exposed to trauma more than five times within their lifetime (Teplin et al., 2013). Youth who experience four or more separate traumas are associated with multiple risk factors include 4to 12 fold increase for alcoholism, drug abuse, and suicide attempt, presence of chronic adult diseases including cancer, heart disease, and liver disease, and even death (Felitti et al., 1998). The risk for trauma exposure doubles in youth from a family with a history of mental illness.

(Costello, et al. 2002). For example, longitudinal research has found girls whose caregivers have a criminal record or a poorly organized home were at highest risk for experiencing a trauma and also more likely to experience sexual abuse than family deaths and serious accidents (Costello et al., 2002). These factors may contribute to the high frequency and intensity of trauma exposure among juvenile justice youth, and more than half of these youth experience six or more traumas (Abram et al., 2004; 2013). Despite these sobering numbers, only 15% of youth with trauma histories are treated in detention centers prior to release (Teplin et al., 2013), highlighting the need for the development of effective treatment for these youth**.**

Juvenile justice youth experience more complex trauma. Youth within the system are often called polyvictims and exposed to multiple types of chronic, repetitive traumas (Abram et al., 2004), including abuse or family violence and interpersonal losses (Ford, Grasso, Hawke, & Chapman, 2013). Polyvictimization is posited as a distal factor for developmental changes and heightened stress responses leading to aggressive, impulsive, and risk-taking behavior (Cohen, Perel, DeBellis, Friedman, & Putman, 2002). As a result of these severe, chronic trauma histories, youth may disregard rules and authority members, thus placing them at greater risk for delinquency (Cook, Blaustein, Spinazzola, & Van der Kolk, 2003; Cook et al., 2005). Research has found each additional traumatic experience increases youth risk for severe, violent delinquent offending, suggesting a link between early traumatic stress and committing violent crime later in life (Fox, Perez, Cass, Baglivio, & Epps, 2015).

Trauma exposure is linked to delinquency. As a result of trauma exposure, youth develop maladaptive survival techniques to cope with the negative life events. Trauma-related symptoms are widespread and can include behavioral, physical, and emotional difficulties (Cohen, Mannarino, & Deblinger, 2006). Youth may develop a wide array of psychiatric disability, including behavioral disorders, anxiety, phobias, and depressive disorders (Schwarz & Perry, 1994). For example, youth may develop general anxiety that causes them to feel unsafe and hypervigilant, or they may develop depressive symptoms related to an unexpected loss of a close friend or caregiver. In regards to behavioral symptoms, some youth may avoid triggers to protect themselves from overwhelming negative feelings of shame. In addition, some youth develop maladaptive coping strategies, such as engaging in nonsuicidal self-injurious cutting behavior (Vanderkolk, Perry, & Herman, 1991) and substantial substance abuse (Stewart, 1996). Cognitively, youth may develop irrational beliefs or expectations about the world and develop negative self-concepts. Youth may develop coping strategies, such as maladaptive thinking and behaviors, to protect them from danger, but instead these behaviors and distortions lead youth to committing offenses.

Of equal importance, trauma negatively affects brain development, resulting in physiological responses such as pulse rate and blood pressure, changes in brain size (DeBellis et al., 1999), and hormonal activity changes, which sensitizes the stress response (Cook et al., 2005). Most pertinent to the juvenile justice system, these youths display heightened stress reactivity and anger due to impaired self-regulation. Most seriously,

trauma can impair executive functioning controlled by the frontal lobe, leading to memory problems, impaired concentration, and poor impulse control (Cook et al., 2005; DePrince, Weinzierl, & Combs, 2009; Polak, Witteveen, Reitsma, & Olff, 2012). Trauma's negative effects on inhibition, impulse control, and planning may lead youth to engage in risky behavior, mediating the pathway to delinquency. Together these consequences create the perfect storm, resulting in the development of delinquent behavior and subsequently youth incarceration.

Those youth most severely impacted by trauma develop post-traumatic stress disorder (PTSD). A conservative estimate indicates that 1 in 10 detained youth have experienced PTSD in the prior year (Abram et al., 2013). This rate exceeds lifetime estimates of community samples three fold (Merkikangas et al., 2010). Lifetime PTSD prevalence among juvenile justice youth is estimated to be 32 to 49%, with more females experiencing the debilitating psychological milieu than their male counterparts (Abram et al., 2013; Cauffman et al., 1998; Sedlak & McPherson, 2010, Steiner et al., 1997). According to the Diagnostic Statistical Manual of Mental Disorders, 5th Edition (DSM-5, American Psychiatric Association, 2013), a diagnosis of PTSD requires the following criteria a) exposure to the traumatic event by direct experience, witnessing the event in person, or learning that the traumatic event occurred to a close family member, b) intrusion or distressing collection of past or psychological distress when remembering cues of event, c) avoidance of thoughts, feelings, memories or external reminders, d) negative alterations in cognitions and mood associated with the event such as inability to remember parts,

negative self-beliefs or expectations about the world, and diminished interest in activities with caregivers, or negative emotional state or inability to express positive emotions, e) hyperarousal such as sleeping, concentration, and anger difficulties, hypervigilance, or reckless or self-destructive behavior, and f) the disturbance causes significant distress in important areas of functioning. Female juvenile justice youth have been found to be six times more likely to suffer from PTSD than the general population, and they are almost twice as likely to experience PTSD as are their male juvenile justice counterparts (Cauffman et al., 1998). Research has found juvenile justice youth with PTSD often develop more severe psychopathology including comorbid diagnoses (Abram, et al., 2013; Ruchkin, Schwab-Stone, Koposov, Vermeiren, & Steiner, 2002). These findings have importance for the broader system since these youths are more likely to have symptomology-inhibited rehabilitation effects.

Research suggests the development of PTSD may reflect the differences in types of trauma males and females endure. Females are more likely to be victims of sexual and physical assault, whereas males are more likely to report witnessing violent events. (Abram et al., 2013; Cauffman et al., 1998). The Survey of Youth in Residential Treatment surveyed 7,073 youth offenders residing in residential facilities (Sedlak & McPherson, 2010) and found that juvenile justice females are twice as likely to report prior history of frequent (more than ten occasions) or injurious physical abuse and more than four times as likely as juvenile justice males to report prior sexual abuse. These gender differences are of great concern because youth with histories of physical and sexual abuse are more likely

to have a history of suicide attempts (Sedlak & McPherson, 2010). While less research has been conducted on pathways to female delinquency, sexual abuse is linked to increased mental health severity, particularly recurrent major depression and suicide attempts (Dixon, Howie, & Starling, 2005; Goodkind, Ig, & Sarri, 2006). Residential correctional facility conditions often exacerbate PTSD symptoms. Youth are often separated from families and correctional staff may use punitive measures such as solitary confinement, physical restraints, or strip searches, and these conditions jeopardize youth's sense of safety. As a consequence of the high rate of trauma exposure and PTSD among juvenile justice youth and associated risk of delinquency, juvenile justice systems must respond by developing and implementing effective test trauma-focused interventions

Trauma-focused Cognitive-Behavioral Therapy (TF-CBT)

Trauma-focused Cognitive-behavioral Therapy (TF-CBT) is the most robustly researched EBT developed for youth following traumatic experiences with sixteen empirical research trials (CATS Consortium & Hoagwood, 2007; Cohen & Mannarino, 1996, 1997; Cohen, Mannarino, & Iyengar, 2011; Cohen, Deblinger, Mannarino & Steer, 2004; Cohen Mannarino & Knudsen, 2005; Deblinger, Mannarino, Cohen, Runyon, & Steer, 2011; Deblinger, Mannarino, Cohen, & Steer, 2006; King et al., 2000; Lippmann, & Steer, 1996; Deblinger, Steer, & Lippmann, 1999; O'Callaghan, McMullen, Shannon, Rafferty, & Black, 2013). TF-CBT has been coined a hybrid treatment model that integrates trauma-sensitive interventions, cognitive-behavioral principals, attachment theory, family therapy, developmental neurobiology, and humanistic therapy (Cohen et al.,

2006; NREPP, 2016). It was originally designed for therapists to provide parallel sessions with children and primary caregivers, and over the course of treatment, the frequency of joint parent and child sessions increases. The purpose of the joint sessions is to increase parental capacity and knowledge about treatment skills and enable youth to share their trauma stories with caregivers in a safe environment. However, treatment has still been found efficacious in comparison to treatment as usual without caregiver participation (Deblinger et al., 1996).

TF-CBT has been found to be effective for treating traumatic stress and the emotional and behavioral symptoms of trauma across a wide range of settings and trauma types (Cohen et al., 2006). Seminal randomized controlled trials (RTCs) comparing TF-CBT to treatment as usual (TAU) focused on sexually abused youth ages 8-14 years, and the study found youth to have significantly greater improvement in PTSD symptoms, depression, and behavioral problems, improvements that were sustained at 2-year follow-up (Deblinger et al., 1999). Research has also found TF-CBT to be more effective than nondirective supportive therapy (NST), with treated youth experiencing improvement in behavioral problems, internalizing problems, and PTSD symptoms (Cohen & Mannarino, 1997). The benefits of TF-CBT have also been found in representative community samples, with reduction of PTSD maintained at one year post treatment (Cohen et al., 2005). Unsurprisingly, treatment has been found to be most effective for reducing PTSD and trauma-related symptoms; across five most recently completed RTCs, the average effect size for reduction of trauma and stress related symptoms is 0.58 (Cohen, Mannarino &

Iyengar, 2011; Jensen et al., 2013; McMullen, O'Callaghan, Shannon, Black, & Eakin, 2013; Murray et al., 2013; O'Callaghan, McMullen, Shannon, Rafferty, & Block, 2013; NREPP, 2015). Treatment also improves general functioning and well-being in regards to aspects of self, family, and community (Jensen et al., 2014; Murray et al., 2015), along with social competence. Ultimately, these results demonstrate TF-CBT effectively treats not only symptoms of both PTSD but also broader range of cognitive, affective, and behavioral symptoms.

Some skeptics originally posited that TF-CBT would not be effective for youth from diverse populations or those who have experienced complex trauma. Youth who have complex trauma, often experienced interpersonal traumas, with primary caregivers as the perpetrators often develop more severe emotional dysregulation and impairment in functioning (Cohen, Mannarino, Deblinger, 2017). Additionally, youth with complex trauma also have disturbances in affective dysregulation, negative self concept, and interpersonal problems in addition to PTSD symptoms (Clitre, Garvert, Brewin, Bryant, & Maercker, 2013). While initial TF-CBT research trials focused on treatment of sexually abused girls (Cohen & Mannarino, 1996, 1998; Deblinger, Lippman & Steer, 1998; Deblinger, Stauffer & Steer, 2001), TF-CBT has also been conducted with youth experiencing complex trauma and youth exposed to multiple traumatic experiences. For example, TF-CBT has been implemented and demonstrated to improve PTSD symptoms in RCTs with low-resourced Zambian orphan youth (Murray et al., 2015), with sexually exploited females (O'Callaghan et al., 2013), former male youth soldiers with complex

trauma in the Democratic Republic of Congo (McMullen et al., 2013), and in Palestinian schools for children impacted by conflict in the Middle East (Berger, Gelkopf, & Heineberg, 2013). O'Callaghan and colleagues (2013) conducted the first RCT for commercially exploited females. Researchers trained lay Congolese counselors how to implement TF-CBT and provided treatment in a group format to sexually exploited females rescued from brothels. The participants in the study experienced complex trauma, reporting a mean of 11.9 trauma types, exposure to multiple types of interpersonal traumas, and significant PTSD symptomology, along with anxiety, depression, and lack of prosocial behaviors. Results found the TF-CBT treatment group to have clinically significant improvement in PTSD, depression, anxiety, and conduct problems, and the results were sustained at 3-month follow up assessments. The above empirical evidence supports the use of TF-CBT across cultures and chronic trauma experiences extending throughout childhood.

TF-CBT has been implemented in over 50 sites worldwide (NREPP, 2016) underscoring the widespread dissemination and transportability of treatment. It is recommended that therapists delivering TF-CBT gain skill acquisition and competence by taking the following actions: 1) Taking the web-based TF-CBT course developed by the Medical University of South Carolina, which includes streaming video demonstrations, printable scripts, cultural factors, and pre and post self-assessment tests, 2) Reading the TF-CBT treatment manual (Cohen et al., 2006), which describes TF-CBT components, provides examples for implementation, includes ideas for therapeutic games and books,

and rating forms to monitor client progress, 3) Attending one to two sessions of intensive skills based training which includes in-vivo role playing and case conceptualization, and 4) Obtaining ongoing consultation with a clinical supervisor to assist with case conceptualization and to monitor treatment fidelity within real life settings (NCTSN, 2004). Although implementation requirements appear rigorous, TF-CBT has been disseminated to low-resource countries and implemented by nonprofessional lay counselors (Murray et al., 2015). Overall, TF-CBT includes over a dozen research trials, and the results suggest TF-CBT is generalizable to children of different developmental stages, those who have experienced multiple and complex traumas, can be implemented in individual or group formats, and implemented by trained lay counselors.

Statement of Problem and Purpose of the Study

An estimated one in five youth has or will have a mental health disorder in his or her lifetime (NIMH, 2015). The economic impact of mental health disorders is sobering, and the total lifetime economic costs of child behavioral healthcare are estimated to be $2.1 trillion (Smith & Smith, 2010). Fortunately, numerous youth psychological interventions, called evidence-based treatments (EBTs), have been evaluated and identified to address a broad range of mental health disorders for particular needs (Chambless & Ollendick, 2001; Hoagwood, et al., 2001; Silverman & Hinshaw, 2008; Weisz & Gray, 2008; Weisz et al., 2004). However, EBTs have not demonstrated the same treatment benefit when transported outside of research contexts and into community settings (Weisz et al., 2006; 2013).

Attenuated benefits of EBTs in usual care may in part be due to that the conditions in research trials do not mirror community clinical settings. In research trials testing EBTs, therapists receive substantial intervention training, clients are carefully selected and present with one mental health disorder, and therapists receive ongoing consultation from a trained expert, whereas usual care clinicians receive minimal training in EBTs, clients present with comorbid diagnoses, and therapists rarely receive ongoing consultation for EBT delivery. Without ongoing expert support and consultation, therapists drift and do not maintain adequate levels of treatment adherence. In fact, when usual care therapists use EBTS, they deliver a broad number of EBT techniques with a low amount of thoroughness and often leave out core components vital to beneficial treatment effects (Garland et al., 2010; Hurlburt et al., 2010). Regardless of the strong evidence base for EBTS in well-controlled trials, the drop off effects as they move into real-world settings —coined the "implementation cliff" (Weisz et al., 2014, p.59) leaves us with interventions compromised for external validity. The aforementioned barriers may diminish EBT effectiveness and lead therapists to abandon these treatments prematurely.

Researchers posit fidelity to be a promising factor to improve EBT delivery, and consequently enhance client outcomes. Treatment fidelity can be broken down into components (treatment specific adherence, nonspecific treatment techniques, and therapist competence), and measurement of each of these components is warranted to capture how they uniquely and together influence therapeutic change (Perepletchikova, 2005). Poor treatment fidelity can compromise the internal, external, and statistical validity of treatment

conclusions. Not only does treatment fidelity ensure the prescribed techniques are delivered, but may ensure the treatment can be generalized to additional settings to meet diverse populations' mental health needs (Borelli et al., 2005). Implementation models theorize fidelity to both serve as a potent indicator of treatment success and also as a factor which can enhance EBT effectiveness in routine care. Measuring treatment fidelity can also be a key quality indicator for treatment success, and so fidelity data can provide a feedback loop to improve therapist performance.

Research remains inconclusive, whether fidelity actually is a key implementation mechanism for optimal treatment outcomes in routine care (Webb et al., 2010). One reason for the mixed results is due to differences in how studies measure treatment fidelity. Fidelity can be measured using global therapist checklists, which while efficient and practical in usual care, lack reliability and do not detect nuanced differences in treatment delivery that may affect treatment success (Perepletchkova & Kazdin, 2005; Schoenwald et al., 2011; Schoenwald & Garland, 2013). Researchers state fidelity must be examined with other possible confound variables, such as a the therapeutic alliance or patient engagement, because they may hinder or enhance therapist fidelity (Imel et al., 2011; Loeb et al., 2005 Perepletchikova & Kazdin, 2005). Given the necessity to appropriately treat mental health disorders in routine care, understanding whether treatment fidelity is an inert or active implementation ingredient for treatments is needed to continue improving the fit of EBTs in for the diverse settings and populations they were intended.

Understanding how to deliver effective treatments is especially vital for youth in juvenile correctional facilities. Youth in correctional facilities experience disproportionate rates of mental illness (Wasserman et al., 2005). If left untreated, these youths remain embedded within the juvenile justice system and are at substantial risk for future adult incarceration. Juvenile youth also report higher rates of trauma, which is correlated with academic problems, substance abuse, and involvement in the child welfare system (Buffington et al., 2010). Although the link between trauma and delinquency has been identified, the juvenile justice system has not tested which trauma treatments can be used with the youth it serves. Trauma-focused Cognitive-behavioral Therapy (TF-CBT) is the most widely examined EBT found to reduce trauma-related symptoms, and its efficacy has been robustly demonstrated in 16 completed empirical trials with ethnically diverse populations (Cohen et al., 2014). Still, the science remains slim on how to transport TF-CBT to residential correctional facilities. Only one randomized controlled trial (RCT) has been published which delivered TF-CBT to adjudicated youth in residential treatment facilities. This trial did not include a comparison group and results but results found that many youth participants continued to meet PTSD criteria after treatment ended (Cohen et al., 2016). Examining therapist fidelity is crucial to understanding the feasibility and barriers to delivering TF-CBT in juvenile correctional settings before a larger scale dissemination of the treatment. Identifying the unique contributions of critical components of TF-CBT can improve our understanding of the processes of therapeutic change and thus provide necessary treatment for trauma-affected adjudicated youth.

This study, addressed a critical implementation gap and examined how therapist fidelity across TF-CBT treatment in juvenile correctional facilities related to youth reported trauma symptoms and emotional and behavioral problems. The study built upon the conceptual implementation model proposed by Proctor and Colleagues (2009) and evaluated whether higher treatment fidelity, a theorized key implementation target, enhanced treatment effectiveness of TF-CBT delivered in juvenile correctional facilities. This study used observational coding of therapy audiotapes to measure fidelity components: adherence to TF-CBT specific strategies, technical competence, nonspecific competence, also called common factors, and patient engagement using an observational coding measure across three treatment phases (1= psychoeducation phase, 2= skill building phase, and 3= narrative and processing). The primary aim examined the relationship between fidelity and youth self-report post session mental health severity. Second, this study explored whether therapists accurately reported treatment adherence and examined the interrater agreement between therapist self-report and observer coding for treatment adherence. Together the results informed researchers on mechanisms of change in routine care —whether higher fidelity relates to improved treatment effectiveness and the clinical value of treatment fidelity as a key treatment success indicator.

Chapter 3: Methods

The current investigation examined how therapist fidelity factors (adherence, technical competence, nonspecific competence, and patient engagement) related to youth self-reported symptomology across treatment, for Trauma -focused Cognitive Behavioral Therapy (TF-CBT), with youth residing in correctional facilities.

The data for the current study came from the, "Bringing What Works to Youth in Correctional Facilities Study: An Evidence-Based Trauma Intervention," funded by the National Institute of Mental Health., hereafter called TYC study. The study examined treatment fidelity from the feasibility trial of TF-CBT within juvenile correctional settings in the TYC study. The TYC study was conducted by Principal Investigators, Dr. Molly Lopez and Dr. Anthony P. Mannarino, and a unit of the Texas Institute for Excellence in Mental Health in the Center for Social Work Research at the University of Texas at Austin School of Social Work. The TYC study was completed in conjunction with the Texas Youth Commission, now renamed the Texas Juvenile Justice Department.

The TYC research project included three research phases. Detailed information regarding the original TYC study can be found in Appendix A and B. Phase 1 involved using a participatory research framework to develop modifications to the TF-CBT model for the juvenile correctional setting, working closely with administrators and clinical staff to identify potential areas to strengthen the fit within the setting. To briefly summarize, TYC study research personnel met with TYC therapists and administers and discussed unique characteristics of the population (youth residing in juvenile correctional facilities)

and organizational issues within a state regulated residential facility that could impact implementation. Administrators, therapists, principal investigators, and research staff identified possible treatment modifications. The discussion resulted in a document of treatment considerations when using TF-CBT within correctional settings (Appendix B). During Phase 2, a small case series pilot study was conducted to assess for feasibility of the recruitment process and also for the refinement of clinical adaptations of TF-CBT. No specific changes to the adaptations/clinical considerations for TF-CBT were identified during the pilot trial. Phase 3 was a feasibility trial of the adapted treatment, implemented by staff currently employed in the correctional setting. The current study examined treatment fidelity from the feasibility trial of TF-CBT.

Participants

Youth participants. Demographic data and clinical characteristics for the youth participant sample is displayed in Table 1. All youth participants were residents at three state juvenile justice correctional facilities in Texas and all participants volunteered to participate in the original study The total fidelity sample included twenty-one youth with approximately equal males (n=11, 52.4%) and females (n=10, 47.6%). The majority of the ethnic composition was Latino (57.1%), followed by Black (23.8%), Caucasian (14.3%), and Other (1%). The legal guardian included biological mother, (76.2%), relative (9.5%), biological father (4.8%), no guardianship (4.8%), and unreported (4.8%).

Of the fidelity sample participants, 52.4% (n=11) had agoraphobia, 33.3% (n=7) had generalized anxiety disorder (GAD), 57.1% (n=12) had obsessive compulsive disorder

(OCD), 38.1% (n=8) had posttraumatic stress disorder (PTSD), 38.1% (n=8) had major depressive disorder (MDD), 38.1% (n=8) had Mania, 47.6% (n=10) had oppositional defiant disorder (ODD), and 42.9% (n=9) had conduct disorder (CD) diagnoses.

Table 2 lists the frequency for number of diagnoses as measured by the Diagnostic Interview Schedule for Children, 4th Edition (DISC-IV) at baseline. Calculations indicate that comorbidity was the norm, with 76.2% of the sample having 2 or more diagnoses. The mean *T* score severity of youth internalizing symptoms and externalizing symptoms, as measured by the Achenbach Youth Self Report (YSR) was (*M*=69.90, *SD*=15.43) and (*M*=70.0, *SD*=13.83) respectively. The mean overall severity of trauma symptoms, as measured by the UCLA Child/Adolescent PTSD Reaction Index for the DSM-IV (UCLA PTSD, RI) was 41.05 (*SD*=10.83), which is above the clinical cutoff of 38 set by the National Child Traumatic Stress Network that determine likelihood of meeting criteria for a diagnosis of PTSD.

Therapist participants. Eight therapists were included in the current fidelity study sample, and therapists were selected if audio recordings of their TF-CBT sessions were available. Data were unavailable regarding the gender or ethnicity of the eight therapists. All therapist participants were staff members within the Psychology division at the three Texas residential correctional facilities where the TYC study was implemented. Therapists held either a master's degree or doctoral degree in psychology.

Table 1

Youth Participant Demographic and Clinical Variables

Variable	N	Percent
Age		
15	1	4.8
16	19	47.6
17	9	42.9
18	1	4.8
Ethnicity		
Caucasian	3	14.3
Black	5	23.8
Hispanic	12	57.1
Asian	0	0
Other	1	4.8
Guardian		
Bio Mother	16	76.2
Bio Father	1	4.8
Adopted Parent	0	0
Relative	2	9.5
No guardian	1	4.8
Other	1	4.8
Agoraphobia	11	52.4
Conduct Disorder	9	42.9
Generalized Anxiety Disorder	7	33.3
Major Depressive Disorder	8	38.1
Mania	8	38.1
Obsessive Compulsive Disorder	12	57.1
Opposition Defiant Disorder	10	47.6
Panic Disorder	9	42.9
Post-Traumatic Stress Disorder	8	38.1
Social Phobia	7	33.3
Specific Phobia	4	19.0

Table 2

Youth Sample DISC-IV Diagnosis Frequency

# Diagnoses	N	Percent
1	5	23.8
2	1	4.8
3	1	4.8
4	3	14.3
5	3	14.3
6	3	14.3
7	2	9.5
8	3	14.3

Note: DISC-IV= Diagnostic Interview Schedule for Childhood. Youth were assessed prior to treatment

Treatment protocol

The treatment protocol, TF-CBT, is a manualized, individual cognitive- behavioral therapy (CBT) treatment for youth exposed to trauma (Cohen et al., 2006). Each session is intended to last approximately 50 minutes. Progression through the protocol should occur within 12-16 sessions for usual cases and 16-20 sessions for complex cases. Treatment entails of eight components, which uses the PRACTICE acronym: Psychoeducation and Parenting skills, Relaxation, Affective modulation, Cognitive Coping, Trauma narrative, In vivo mastery of trauma reminders, Conjoint youth-parent sessions, and Enhancing future safety and development. A detailed description of each component and delivery guidelines can be found in Appendix A and the TF-CBT treatment manual (Cohen et al., 2006).

The TF-CBT treatment protocol was adapted in the TYC study for use correctional facilities. A full list of documented adaptations is provided in Appendix B. One key adaptation, relevant for coders in the fidelity study, was development of a trauma narrative that encompassed a chronic history of trauma rather than one specific event. Development of a trauma narrative about recurrent crime can be difficult in correctional facilities, and therapists were instead encouraged to develop a trauma narrative addressing underlying issues that led to the youth's current legal history.

Instrumentation

Demographics. Demographic information regarding the youth participants was collected from youth records. Research staff from the TYC obtained age, gender, ethnicity, guardianship, and psychiatric history.

Symptomology Instruments.

Achenbach Youth Self Report. The Youth Self Report (YSR; Achenbach, 2001) is a youth completed measure to assess child and adolescent psychopathology from 11-18 years of age. The YSR is the youth equivalent to the Child Behavior Checklist for youth ages 6 to 18 (CBCL/6-18, Achenbach, 2001) and contains 112 statements about their own problems and competencies in a standardized format. Respondents use a 3-point likert scale to indicate how well each statement is true to them in the previous six months. The YSR includes 8 syndrome scales (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, Aggressive Behavior). These syndrome scales are grouped according to Internalizing Problems and Externalizing problems. Internalizing problems refer to overcontrolled regulation of internal regulation such as anxiety and depression, whereas externalizing problems result from undercontrolled self-regulation such as hyperactivity and aggressive or conduct problems. The internalizing problems and externalizing problems subscales was used from the Achenbach Youth Self-Report form.

For the internalizing and externalizing problem subscales, T-scores of 65-69 are considered borderline whereas T scores above 69 are in the clinical range. Psychometric findings yield substantial internal consistency for the Syndrome scale (0.79) and Internalizing and Externalizing scale (0.90). Good test-retest reliabilities have also been found for syndrome scale (M α = 0.89) and Internalizing and Externalizing scale (M α

=0.92), (Achenbach & Rescorla, 2001). The YSR was administered and collected for each participant every two weeks during the TYC study.

The UCLA PTSD Reaction Index for Diagnostic and Statistical Manual of Mental Disorders., fourth edition (DSM-IV), Adolescents Version (UCLA-PTSD, RI; Sternberg et al., 2004) consists of 27 self-report items to screen for exposure to traumatic events and assess DSM-IV PTSD symptoms in youth ages 7 to 18 years of age across a wide range of ages, settings, and cultures (Steinberg et al., 2004). The scale assesses the frequency of occurrence of PTSD symptoms during the past month (rated from 0 = none of the time to 4 = most of the time). The items map directly onto DSM IV intrusion, avoidance, and arousal criteria, while two additional items assess associated features (fear of recurrence and trauma-related guilt).

The items are summed to match DSM-IV diagnostic criteria or summed to form a severity score (range = 0 to 88). A cutoff score of 38 or greater yields greatest sensitivity for PTSD criteria (Steinberg et al., 2004), and a cutoff score of ≥ 25 (moderately severe PTSD) was required for inclusion in the TYC study. The UCLA-PTSD, RI has good convergent validity (0.70) with the PTSD Module for the Schedule for Affective Disorders and Schizophrenia for School Age Children (Sternberg et al., 2004). Psychometric properties derived from a large sample of children and adolescents from the National Child Traumatic Stress Network yielded good to excellent internal consistency reliability across age races, sex, and racial/ethnic groups (α =.88-.91), (Steinberg et al., 2013). Test-retest reliability for the total scale is high (r=.84) for the interval range from 6 to 26 days

(Rodriquez, Steinberg, Saltzman, & Pynoos, 2001). The symptoms scale of UCLA-PTSD, RI was administered and collected for each participant every two weeks during the TYC study.

Treatment Fidelity Instrumentation.

The PRACTICE fidelity rating system for TF-CBT (PRACTICE FiRST, Jensen-Doss & Lopez 2012***).*** The PRACTICE FiRST is an observational coding system measuring both adherence to the TF-CBT components and therapist competency (Lopez, 2012). Ratings are made on a session-by-session basis. Session ratings include prescribed therapist behaviors, primarily the use of the PRACTICE components and the percentage of session time devoted to that component (1=N/A, 2=Brief Review Only, 3=1-25%, 4=25-50%, 5=>50%). For each treatment element utilized in a session, ratings are made of therapist behaviors utilizing a 4-point Likert scale (1=Poor, 2=Fair, 3=Adequate/Good, 4=Excellent). Following the recommendations of Waltz and colleagues (1993), additional measures of competence are made on behaviors that are not unique to TF-CBT, but are essential to its successful use, such as utilizing developmentally appropriate activities to engage the youth, hereafter called nonspecific competence. Inappropriate therapist behaviors are also rated, including dominating the interaction or derailing treatment progress to address a nonemergency concern. Additionally, for the current study, a measure of patient engagement was added to the observational coding system. Patient engagement is defined as a reciprocal process between provider and client and follows the guidelines set by Becker, Boustani, Gellatly, and Chorpita, (2018), and "represents an individual's

multidimensional (e.g.., social, cognitive, affective, and behavioral) commitment to treatment," (p 2.). Client engagement in each session is coded on a 5-point Likert scale (0= Not engaged, 1= slightly engaged, guarded with therapist and avoids treatment content, 2= partially engaged, guarded with therapist but does treatment activities with low motivation, 3=Moderately engaged, 4=Fully open and engaged, youth participates in treatment activities willfully and appears to discuss affective and cognitive processes with apparent openness). Summary competency ratings are made for each session by averaging the item ratings for TF-CBT specific elements (Adherence Scale), nonspecific competence elements (Nonspecific Scale), and technical competence for all TF-CBT specific elements (Technical Competence Scale).

For the current fidelity study, items on the technical competence and nonspecific competency scales were summed, and an average was produced for each coded treatment session. For the adherence subscale, the highest value, for percent of session time, devoted to a specific TF-CBT treatment element was selected for analyses. For example, when a therapist spent one to twenty-five percent(1-25%=1) of time on psychoeducation and over fifty percent of time (>50%=4) of time on relaxation, the therapist received a "4" on the Adherence scale. Patient engagement was measured by a single rating.

Session update form. The session update form is a therapist completed TF-CBT adherence checklist. Therapists indicate with a (yes/no) response which treatment PRACTICE elements they delivered after each session. Therapists additionally report any barriers from the following lists: crisis, youth nonparticipation, or problems with alliance.

Therapists provide a brief description of additional barriers not listed on the form. Therapists also record whether assigned homework was completed by the youth participants. The session update form, form is an amended version of TF-CBT Brief Practice Checklist included in both the TF-CBT manual (Cohen et al., 2017) and also in the TF-CBT implementation guide developed by the National Child Traumatic Stress Network (2004). The purpose of the original practice of the checklist, which was updated by Deblinger and Colleagues (2008), was to track the timing and implementation of specific TF-CBT elements. The checklist provides feedback to therapists and supervisors to determine whether TF-CBT fidelity is adequately maintained.

Procedure

Approval by human subjects committee. The current fidelity study examined a subset of the sample from the effectiveness trial of the TYC study, which was approved by the Institutional Review Board (IRB) at the University of Texas (IRB # 2011-04-0116). The University of Texas Office of Research Support (ORS) determined the current fidelity study on 05/09/2017 to be exempt from IRB oversight due to secondary use of de-identified data set with no direct or links to identifiers (Appendix D).

TYC Study Procedures. The TYC feasibility study was intended to provide initial information about the effectiveness of TF-CBT within correctional facilitates. A summary of TYC study procedures is described below, and a more though descriptive of TYC instrumentation and procedures is in Appendix A.

Youth participants were included if they met one diagnosis on the Diagnostic Interview Schedule for Children (DISC-IV; Shaffer, Fisher, Lucas et al., 2000) and experienced one traumatic event measured by the Traumatic Events Screening Inventory for Children-Revised ((TESI-CRF; Ford & Rogers, 1997). TYC study staff administered the DISC-IV and TESI-CRF at baseline prior to treatment. Youth completed DISC-IV modules for the Post-Traumatic Stress Disorder, Generalized Anxiety Disorder, Obsessive Compulsive Disorder, Specific Phobia, Major Depression Disorder, Mania, Oppositional Defiant Disorder, and Conduct Disorder.

All therapists in the TYC study participated in a two-day face-to-face workshop on TF-CBT with the treatment developer Dr. Anthony Mannarino. Each therapist also received various written and electronic materials to support treatment implementation. Therapists participated in web-based supervision meetings every two weeks. During the supervision meetings, therapists presented individual cases and discussed treatment progress, barriers, and addressed questions related to applying TF-CBT with individual youth.

Following recruitment and completion of initial assessments, youth entered a run-in period, during which all subjects assessed at 2 weeks and 4 weeks with no intervention. Youth were assigned to begin TF-CBT if a therapist was available, otherwise youth were placed on the wait list and continued biweekly symptom assessments. Youth were not placed on groups based on random assignment, primarily due to input for agency administration preferring a youth selected based on time, and ensure youth receive services

before leaving the facility. Removal from the waitlist occurred primarily due to time (first come/first serve).

Youth completed the UCLA PTSD Reaction Index and Achenbach Youth Self Report (YRS) at study entry and then completed these measures every two weeks during study participation. Additional measures of treatment satisfaction were completed by youth and described in Appendix A. Finally, after each session therapists completed the self reported treatment adherence session update form.

Fidelity Study Observational Procedures.

Coders. Three female graduate students in school psychology completed observational coding of treatment sessions using the PRACTICE FiRST measure. Two members of the coding team had three years of clinical experience and one coder had five years of clinical experience. All coders completed coursework in cognitive behavioral therapy, behavior therapy, and adolescent and child psychopathology.

Coder training. Coders underwent a rigorous training protocol. First, coders completed the online TF-CBT*Web* training course available at www.musc.edu/tfcbt. The online course provides description of the treatment model, step-by-step instructions, scripts, and demonstration videos. Second, coders reviewed the TF-CBT manual, adaption materials for juvenile correctional facilities, and therapist training materials to expand upon their knowledge of treatment strategies and sequencing. Reliability coding training progressed through the reliability steps for the PRACTICE FiRST observational coding measure (Lopez, 2012). Each coding team member independently coded a total of six

training audio samples representing a range of therapist abilities and treatment timepoints. After coding two audio samples, the coding team discussed scoring via phone conference. The coding team met for a total of three phone conference meetings during the reliability training. Reliability was assessed against gold standard master codes for the PRACTICE FiRST measure. The gold standard was modified when all three coding members independently either scored for a treatment element as present or not present.

Agreement regarding adherence, nonspecific competency, and technical competency during the reliability training period is displayed in Table 3. For comparison, gold standard kappa values ranged from (.643-.740). Interrater reliability was calculated across all coders using the model ICC(2,4), based on a two-way random effects model for each of the composite subscales TF-CBT adherence, nonspecific competence, and technical competency. Further, ICC's ranged from "good" to "moderate" benchmarks (Shrout & Fleiss, 1979) on all three composite PRACTICE FiRST scales (TF-CBT adherence ICC=.662, nonspecific competency scale ICC=.666, and technical competency scale, ICC=.543).

Table 3

Coder reliability training statistics for the PRACTICE FiRST observational coding measure

Scale	Kappa	*SE*	*p*
TF-CBT Adherence			
Coder1 x gold standard	.64	.15	.00
Coder2 x gold standard	.74	.14	.00
Coder 3 x gold standard	.73	.13	.00
Nonspecific Competency			
Coder1 x gold standard	.48	.08	.00
Coder2 x gold standard	.42	.09	.00
Coder 3 x gold standard	.32	.73	.00
Technical Competency			
Coder1 x gold standard	.70	.77	.00
Coder2 x gold standard	.44	.74	.00
Coder 3 x gold standard	.42	0.85	.00

Note. Data shows the agreement regarding presence of TF-CBT PRACTICE elements between raters and gold standard ratings on the PRACTICE FiRST observational coding measure for the three subscales (Adherence, Nonspecific competency, and Technical Competency).

Audio session sampling procedures. First, audiotapes for each youth participant were divided into three treatment phases based on the TF-CBT treatment model. Phase 1 included treatment sessions occurring at the beginning of treatment, including psychoeducation of the treatment model, trauma symptoms, and traumatic experiences. Phase 2 included treatment sessions in the middle of treatment, and it included sessions using affective education, relaxation techniques, coping skills to modulate emotional and behavioral responses to trauma triggers, and cognitive restructuring to alter maladaptive cognitions. Finally, phase 3, included audio sessions in the latter part of treatment focusing on developing and processing a trauma narrative. In the remainder of the document the phases are referred to as the following: phase 1=psychoeducation, phase 2= skills, and phase 3=trauma narrative and processing.

Second, one audiotape was randomly selected for each participant at each treatment phase and met the following criteria: (a) audio recording was longer than 15 minutes, (b) therapist and youth were audible, (c) audio recording was not damaged (e.g. audio recording did not stop abruptly). Refer to *Figure 2* for a flowchart of participant flow for audiotape sampling selection. Each youth participant in the study did not have an audiotape at each treatment phase. All youth participants (n=21) had audio tapes from treatment phase 1 and phase 2. However, almost half of the sample was excluded from the final phase (n=11) due to missing audiotapes. Evaluation of records indicated 6 of the 10 excluded participants in phase 3 completed treatment, and missing audio was likely due to error in file uploading. Two participants did not have audiotapes because were released early and

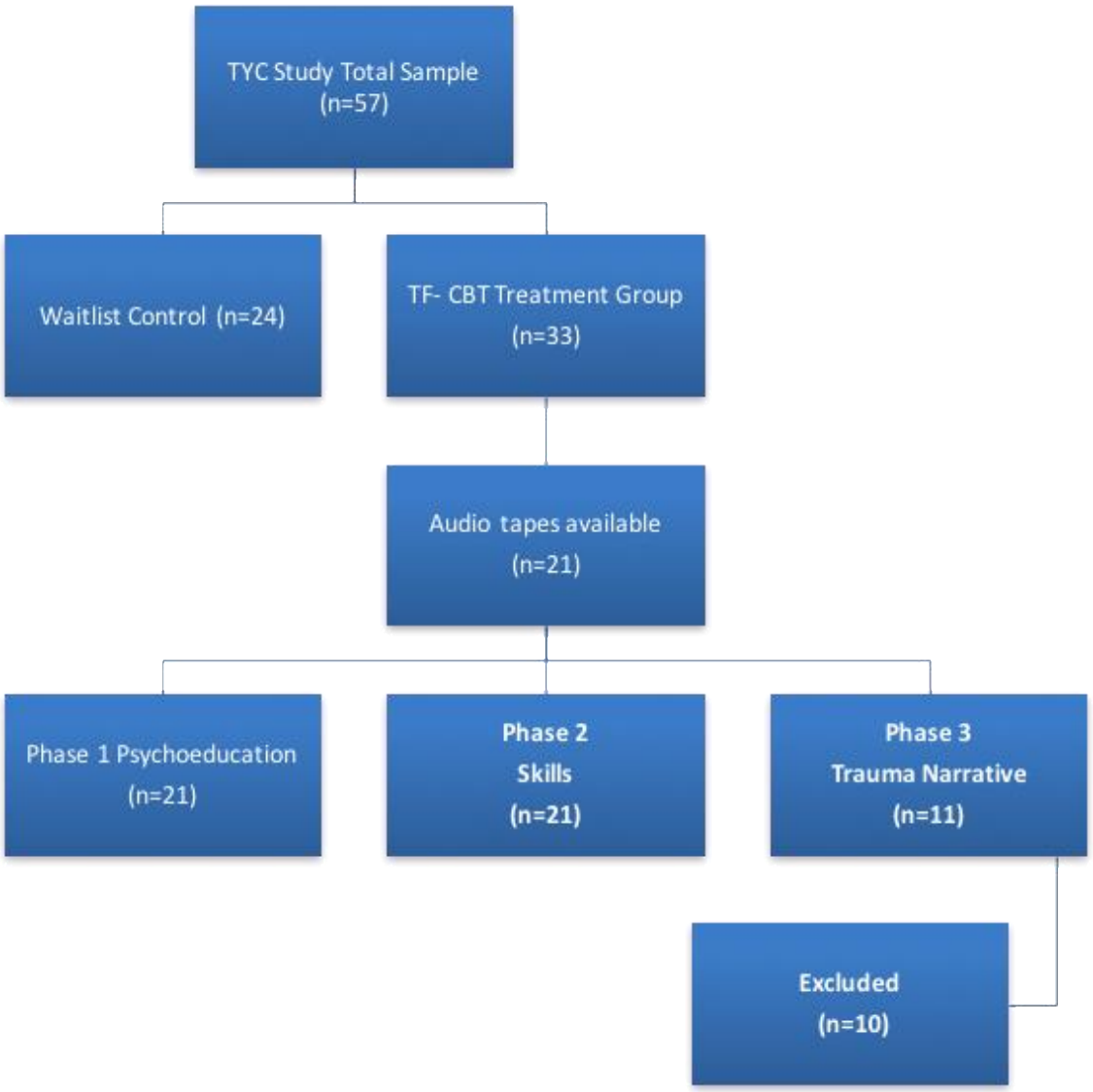

Figure 2. Participant flowchart for study selection and analyses grouping.

This figure shows the participant flow from the original TYC study and participant current study. The chart also displays which participants were included in each treatment phase analysis (1=psychoeducation, 2=skills, and 3=trauma narrative and processing).

did not complete a trauma narrative. Two additional study participants transferred to halfway houses prior to completing treatment.

Assignment and coding of audiotapes. A total of n=53 audio tapes were included in the study. Twenty-one sessions were coded from phase 1, twenty- one sessions were coded from phase 2, and eleven sessions were coded from phase 3. Coders were blind to the session phase. Over ten percent (n=9, 16%) of the sessions were double coded by a total of three coders to calculate inter-rater reliability for the PRACTICE FiRST coding measure. Each coder was instructed to listen and record their scores on the PRACTICE FiRST coding system in entirety. When coders had questions they were discussed as a team and resolved by the principal investigator. For each audiotape, the coder assigned to the audiotape also completed the session update form. The coder rated a PRACTICE technique present when therapists spent >50% of the session on the technique. Coders also recorded identified treatment barriers on the session update form.

Inter-rater reliability. One coder dyad double coded (n=4) tapes and the second dyad double coded (n=5) tapes. Interrater reliability was calculated across each coding dyad using the model ICC (2,2), based on a two-way random effects model (Shrout & Fleiss, 1979). ICC's for TF-CBT adherence ranged from .920-.940, nonspecific competency ICC's ranged from .538-.983, and technical competency ICC's ranged from .684-.696. Kappa values ranged from .523 to .732 which represents informant agreement on the presence and absence of TF-CBT techniques.

Research Questions, Hypotheses, and Data Analysis

This exploratory study examined relationships among adherence, technical competence, and nonspecific treatment competence, patient engagement, trauma, and mental health in incarcerated youth. The study investigated the following research questions and hypotheses.

Research question 1. To what degree does therapist fidelity to TF-CBT relate to the severity of youth ratings of trauma symptoms and internalizing and externalizing problems for incarcerated youth across treatment?

Hypothesis 1a. It was hypothesized that higher treatment fidelity would predict lower youth self-reported post session trauma symptoms across treatment. Specifically, there would be a negative relationship between TF-CBT adherence, technical competence, nonspecific competence, patient engagement and post session youth self-reported trauma symptoms.

Analytic strategy 1a. To answer this question, a multiple regression was calculated with TF-CBT adherence, technical competence, nonspecific competence, patient engagement, and baseline trauma symptoms as the independent variables and trauma symptoms as the dependent variable. The analysis was repeated at each treatment phase (1=psychoeducation, 2=skills, and 3= trauma narrative and processing).

Hypothesis 1b. It was hypothesized that higher treatment fidelity would predict lower youth self-reported post session internalizing problems. Specifically, there would be a negative relationship between TF-CBT adherence, technical competence, nonspecific

competence, patient engagement and youth post session self-reported internalizing problem severity.

Analytic strategy 1b. To answer this question, a multiple regression was calculated with TF-CBT adherence, technical competence, nonspecific competence, patient engagement, and baseline internalizing problems as the independent variables and internalizing problem severity as the dependent variable. The analysis was repeated at each treatment phase (1=psychoeducation, 2=skills, and 3= trauma narrative and processing).

Hypothesis 1c. It was hypothesized that higher treatment fidelity would predict lower youth self-reported post session externalizing problems. Specifically, there would be a negative relationship between TF-CBT adherence, technical competence, nonspecific competence, patient engagement and youth post session self-reported externalizing problem severity.

Analytic strategy. To answer this question, a multiple regression was calculated with TF-CBT adherence, technical competence, nonspecific competence, patient engagement, and baseline externalizing problems as the independent variables and externalizing problem severity as the dependent variable. The analysis was repeated at each treatment phase (1=psychoeducation, 2=skills, and 3= trauma narrative and processing).

Research question 2. Can community therapists accurately report treatment delivery? Can therapists identify barriers hindering the therapeutic process?

Hypothesis 2. It was hypothesized that there would be poor interrater agreement between therapist self-report ratings of treatment adherence and observational coders'

ratings of treatment adherence. Specifically, therapists and expert observational coders would have poor interrater agreement on the TF-CBT PRACTICE techniques and reported treatment barriers on the session update form.

Analytic strategy 2. Summary descriptive statistics were first conducted to describe the frequency with which each of the treatment elements were reported from both the observer and therapist perspectives. Kappa statistics were calculated dichotomizing the presence or absence of a treatment element. A treatment element was considered present by observation coders if they identified the TF-CBT element covering >50% of the total session time. Kappa statistics could not be computed if either therapist self-report ratings or observational coders did not indicate the presence of a technique or strategy. When kappa statistics could not be computed, interrater agreement was poor. This analysis determined whether therapists provide biased estimates of treatment fidelity in self-report measures.

Chapter 4: Results

This exploratory study examined the relationship between treatment fidelity (therapist adherence, technical competence, nonspecific competence, patient engagement) and youth self-reported trauma and mental health symptoms in incarcerated youth. The study investigated the following hypotheses. I hypothesized that while controlling for baseline mental health symptom severity, adherence, technical competence, nonspecific competence, and youth engagement would negatively relate to youth self-reported post session mental health symptoms severity across treatment. A secondary aim of the study examined how therapists' self-reports of TF-CBT treatment adherence ratings and treatment barriers matched observational coders' ratings. It was hypothesized that therapists and expert observational coders would have poor inter-rater agreement on therapist treatment fidelity and treatment barriers. For all comparisons, significance was achieved using an alpha of .05. The *p* value for these tests should fall below .05 to be significant. Preparation of the data, calculation of preliminary statistics, reliability statistics, correlations, and regression analyses were conducted using SPSS 25.

Descriptive Statistics

Descriptive statistics including means, ranges, standard deviations were obtained for proposed variables of interest. These variables included youth trauma symptom severity, internalizing problems, and externalizing scores, the three fidelity subscales on the PRACTICE FiRST measure, and patient engagement. The three fidelity subscales included adherence, technical competence, and nonspecific competence. Trauma symptom

severity was measured by the youth self-report UCLA PTSD Reaction Index, which maps onto DSM-IV posttraumatic stress disorder (PTSD) criteria. The internalizing problems and externalizing problems subscales was used from the Achenbach youth self-report (YSR). Youth self-report measures were completed 1 to 14 days after each treatment session and describe post-session symptom severity.

PRACTICE FiRST Subscales. Descriptive data including, means of each of the PRACTICE FiRST subscales, are presented in Tables 4, 5, and 6. Descriptive statistics for patient engagement is included in Table 6, but it is a separate measure and was not calculated in the average nonspecific competence subscale ratings. For the adherence subscale (Table 4), frequencies and percentages were calculated for the use of specific TF-CBT PRACTICE elements across each phase (1=psychoeducation, 2=skills, and 3=trauma narrative and processing). For the competence subscales (technical and nonspecific) both means and standard deviations were calculated for each component in the three treatment phases (Table 5 and Table 6). Across all 53 coded sessions, means for the PRACTICE FiRST scales were as follows: adherence scale (M=4.24, SD=0.83), technical competence scale (M=2.62, SD=0.89), nonspecific competence scale (M=2.87, SD=0.54), and patient engagement ((M=2.77, SD=1.01).

F tests were conducted to examine whether there were significant differences in adherence, technical competence, nonspecific competence, and patient engagement across each treatment phase. A 1 (adherence, technical competency, nonspecific competence, or patient engagement) x 3 (treatment phase) factorial ANOVA was conducted to examine

whether there were significant differences in the fidelity factors in each treatment phase. Posthoc comparison of significant means was examined using the Tukey HSD approach. There were no differences in technical competence $F(1,2)= 0.729$, $p=.487$, nonspecific competence $F(1,2)=0.281$, $p=.756$, and patient engagement $F(1,2)= 0.542$, $p=.585$ scores. However, there was a significant difference for adherence, $F(1,2)= 4.587$, $p=.015$. Specifically, treatment adherence was significantly higher in phase 3 ($M=4.64$) than phase 2 ($M=3.86$). Therapists spent more time on delivering TF-CBT treatment techniques in the trauma narrative and processing phase than in the psychoeducation or skills phase.

Adherence subscale. Frequencies and percentages for adherence to TF-CBT treatment elements delivered across treatment are presented in Table 4. The strategies comprise of the TF-CBT specific adherence scale on the PRACTICE FiRST observational measure. Treatment homework was expected to be assigned in all sessions, but it was assigned in less than half of the sessions. Analysis of the techniques used across treatment indicate therapists correctly sequenced treatment as prescribed in the manual. Psychoeducation was coded most frequently in phase one, skill techniques, including affective education, modulation, and cognitive coping were coded most frequently in phase two, and the trauma narrative was coded most frequently in phase three, indicating that therapist appropriately sequenced treatment elements. Of the TF-CBT skills, relaxation was coded most frequently, followed by affective expression and cognitive coping equally, and finally affective modulation. In-vivo exposure and safety planning was not coded in any of the 53 sessions, and skill development was coded in one session.

Table 4

Frequency statistics for the TF-CBT Adherence scale elements across the total sample and in each treatment phase 1, 2, and 3,

	Total n=53	Phase 1 n=21	Phase 2 n=21	Phase 3 n=11
	Count(%)	Count(%)	Count(%)	Count(%)
Homework Reviewed	14(26.4)	2(9.5)	9(42.9)	3(27.3)
Homework Assigned	24(45.3)	11(52.4)	12(57.1)	1(9.1)
Psychoeducation	28 (52.8)	21(100)	4(19.0)	3(27.3)
N/A	25(47.2)	0(0)	17(81.9)	8(72.7)
Brief Review	5(9.4)	1(4.)	2(9.5)	2(18.2)
1-25%	3(5.7)	2(9.5)	0(0)	1(9.1)
25-50%	9(17.0)	7(33.3)	2(9.5)	0(0)
>50%	11(20.8)	11(52.4)	0(0)	0(0)
Relaxation	19(35.8)	10(52.6)	7(33.33)	2(18.20)
N/A	34(64.2)	11(52.4)	14(66.7)	9(81.8)
Brief Review	7(13.2)	3(14.3)	2(9.5)	2(18.2)
1-25%	4(7.5)	3(14.3)	1(4.8)	0(0)
25-50%	7(13.2)	4(19.0)	3(14.3)	0(0)
>50%	1(1.9)	0(0)	1(4.8)	0(0)
Affective Expression	13(24.5)	1(4.8)	11(52.4)	1(9.1)
N/A	40(75%)	20(95.2)	10(15.8)	10(90.9)
Brief Review	5(9.4)	1(4.8)	3(14.3)	1(9.1)
1-25%	5(9.4)	0(0)	5(23.8)	0(0)
25-50%	2(3.8)	0(0)	2(9.5)	0(0)
>50%	1(1.9)	0(0)	1(4.8)	0(0)
Affective Modulation	8(15.09)	1(4.76)	6(28.57)	1(9.10)
N/A	45(84.9)	20(95.2)	15(71.4)	10(90.9)
Brief Review	2(3.8)	1(4.8)	0(0)	1(9.1)
1-25%	3(5.7)	0(0)	3(14.3)	0(0)
25-50%	3(5.7)	0(0)	3(14.3)	0(0)
>50%	0(0)	0(0)	0(0)	0(0)

Table. 4 Continued

Cognitive Coping	13(24.53)	0(0)	11(52.38)	2(18.20)
N/A	40(75.5)		10(47.6)	9(81.8)
Brief Review	1(1.9)		0(0)	1(9.1)
1-25%	7(13.2)		6(28.6)	1(9.1)
25-50%	2(3.8)		2(9.5)	0(0)
>50%	3(5.7)		3(14.3)	0(0)
Trauma Narrative	13(24.5)	0(0)	2(9.52)	11(52.39)
N/A	40(75)		19(90.5)	0(0)
Brief Review	0(0)		0(0)	0(0)
1-25%	3(5.7)		2(9.5)	1(9.1)
25-50%	3(5.7)		0(0)	3(27.3)
>50%	7(13.2)		0(0)	7(63.6)
In-Vivo	0(0)	0(0)	0(0)	0(0)
N/A				
Brief Review				
1-25%				
25-50%				
>50%				
Safety Planning	0(0)	0(0)	0(0)	0(0)
N/A				
Brief Review				
1-25%				
25-50%				
>50%				
Skill Development	1(1.89)	0(0)	0(0)	1(9.1)
N/A	52(98.1)			10(90.9)
Brief Review	0(0)			0(0)
1-25%	0(0)			0(0)
25-50%	1(1.9)			1(9.1)
>50%	0(0)			0(0)
Caregiver Participation	1(1.9)	0(0)	0(0)	1(9.1)
Barriers	31(58.6)	9(42.9)	15(71.4)	7(63.6)
Crisis Arose	7(13.2)	0(0)	6(28.6)	1(9.1)
Youth nonparticipation	10(18.9)	3(14.3)	1(4.8)	6(54.5)
Problems with alliance	9(17.0)	4(19.0)	5(23.8)	0(0)
Other	5(9.4)	2(9.5)	3(14.3)	0(0)
No Barriers	22(41.5)	12(57.1)	6(28.6)	4(36.4)

Technical competence subscale. Means and standard deviations for the technical competency scale are presented in Table 5. Higher ratings indicate observational coders rated therapists to delivered techniques more skillfully, and conversely lower scores indicate coders rated therapists to deliver specific treatment elements inadequately. Across all therapists, coders rated therapist to most skillfully deliver affective education treatment elements, homework assignments, and affective modulation treatment elements. Both overall technical competency scores were low on trauma narrative and processing and supporting parent involvement, indicating these were the most poorly implemented TF-CBT treatment components.

Nonspecific competence subscale. Means and standard deviations for the nonspecific competence scale strategies on the PRACTICE FiRST measure are summarized in Table 6. Similar to the previous subscales, the subscale descriptive data provides indicators of therapist skill in overall common elements that can inform how treatment was delivered. Overall, the highest score on the nonspecific competence subscale was warmth/genuineness. Therapists were rated above an "adequate/good" level of nonspecific competence on warmth and genuineness. Therapists were rated overall most poorly on parent support of treatment and use of time. The lowest mean score was on parent support of treatment, and therapists were rated between "poor and fair." There were not significantly different means on any of the nonspecific competence strategies indicating therapists were relatively constant in their therapeutic style.

Table 5

Item mean scores for the technical competency scale across in the total sample of audiotapes and each treatment phase 1, 2, and 3.

	Total (n=53)		Phase I (n=21)		Phase 2 (n=21)		Phase 3 (n=11)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Homework Reviewed	2.86	1.01	3.50	0.71	3.00	1.12	2.00	1.00
Homework Assigned	3.00	1.18	3.18	1.17	2.75	1.22	4.00	N/A
Psychoeducation	2.46	0.89	2.43	0.81	2.75	0.96	2.33	1.53
Relaxation	2.95	0.91	2.90	0.99	2.71	0.76	4.00	0.00
Affective Expression	3.08	1.12	3.00	N/A	3.18	1.17	2.00	N/A
Affective Modulation	3.00	0.93	1.00	N/A	3.17	0.41	4.00	N/A
Cognitive Coping	2.62	1.12	-	-	2.55	1.13	3.00	1.41
Trauma Narrative	2.31	1.03	-	-	3.59	0.71	2.09	0.94
In-Vivo	-	-	-	-	-	-	-	-
Safety Planning	-	-	-	-	-	-	-	-
Skill Development	1.00	N/A	-	-	-	-	1.00	N/A

Note. Scores on the technical competence subscale are 1=poor, 2=fair, 3=Adequate/Good, and 4-Excellent; Blank cell indicates that the treatment element was not present and there was no competence score because the component was not delivered; N/A indicates there was only one observation and the standard deviation was not calculated;

Table 6

Item mean scores for the nonspecific competency scale across the total sample of audiotapes and in each treatment phase 1, 2, and 3.

	Total (n=53)		Phase I (n=21)		*Phase 2* (n=23)		Phase 3 (n=11)			
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Warmth	3.25	0.75	3.19	0.68	3.14	0.73	3.55	0.69	1.30	0.28
Developmental Engagement	2.83	0.83	2.52	0.68	3.10	0.83	2.91	0.94	2.75	0.07
Use of Time	2.60	0.88	2.95	0.82	2.38	0.92	2.36	0.81	2.90	0.06
Facilitative Balance	2.87	0.74	2.90	0.83	2.95	0.59	2.64	0.81	0.70	0.50
Addressing Additional Concerns	2.83	0.96	3.10	0.96	2.76	0.89	2.45	0.81	1.76	0.18
Parent Support of Treatment	1.50	0.58	2.00	-	1.50	0.71	1.00	-	0.50	0.71
Patient Engagement	2.77	1.01	2.86	0.91	2.86	1.11	2.45	1.04	0.54	0.58

Note. Values on the nonspecific competence were 1=poor, 2=fair, 3=Adequate/Good, and 4-Excellent; Cells with a (-) indicate a standard deviation was not calculated because there was one value.

Treatment barrier frequency. Coders rated more than half of the audio sessions to have a treatment barrier. The majority of barriers were youth nonparticipation, followed by problems with alliance, a crisis arose, and "other." Analysis of "other" barriers included, "youth was distractible with low attention span," "youth wanted to discuss content unrelated to treatment, and "therapist verbally reprimanded youth and chose to discuss why youth was sent to security for three-fourths of the session length." In phase 1, problems with alliance were most frequent, in phase 2, a crisis was the most frequent barrier, and in phase 3, youth nonparticipation was the most frequently reported barrier.

Frequency of TF-CBT techniques used across treatment. Frequency counts for the total number of treatment elements in each treatment phase suggested treatment dosage varied across treatment. The total number of different TF-CBT specific elements delivered in one session ranged from 1 to 5, with a mean 2.3 treatment elements per session. On average, therapists delivered 2.3 strategies across treatment length. During the psychoeducation phase 1, therapists delivered an average 2.1 treatment elements ranging between 1 to 4 total elements. During the skills phase, therapists delivered 2.8 strategies on average, and therapists delivered a range of 1 to 5 separate treatment elements. During the final trauma narrative and processing phase, therapists delivered an average of 2.1 strategies ranging between 1 to 3 separate treatment elements. The average length of each session was 44.23 minutes, (*SD*=12.35), and the minimum session length was twenty minutes and the maximum session length was seventy-nine minutes. The variability in

session length likely reflects the limited time therapists had to deliver treatment while maintaining their employment duties.

Preliminary Analyses

Prior to testing the study hypotheses, preliminary data analyses were completed to strengthen the validity of the conclusions. All data were checked by visual inspection of plots and histograms. All variables were standardized and inspected for outliers. One outlier was noted on the baseline measure of the UCLA PTSD, RI baseline measure. However, due to the small sample size it was decided to keep the observation in the data set. All other Z-scores on predictor and outcome variables were less than two standard deviations from the mean, indicating that each variable was within normal limits.

Data was also inspected to meet the underlying assumptions of multiple regression. Multiple regression analysis includes four underlying assumptions: Normality of the residuals, linearity of data between the dependent and independent variables, homoscedasticity of errors, and independence of observations. Normality was evaluated by examining the values of the standardized residuals and examination of a q-q plot of the residuals showing the value of the residuals on the x axis and the expected value of the residuals on y axis. Homoscedasticity of variance indicates that the variance of the errors is equal across all values of the independent variables. Scatterplots and boxplots of residuals against the independent variables were evaluated. Linearity requires the dependent variable to be a linear function of the independent variables. A scatterplot was created plotting the residuals against the independent variables. Visual inspection of data

determined a linear relationship exists. Independence of observations required the errors for each observation to be independent from others. The final assumption, independence of errors, was evaluated with a boxplot of the residuals. Results indicated all assumptions were met.

A correlation matrix was produced which included all variables in the study for each treatment phase 1, 2 and 3 (Table 7, 8, and 9). In each treatment phase, baseline trauma symptoms, externalizing problems, and internalizing problems were highly correlated with each other. Additionally, the matrix indicated there were overall weak correlations between the independent and dependent variables. The correlation matrix also shows that multicollinearity was not present. Multicollinearity occurs when one independent variable is highly correlated with a second independent variable, and can inflate standard errors and provide invalid statistical conclusions. Tolerance statistics were also calculated for each independent variable in the regression analysis in order to assess for multicollinearity. According to Cohen and colleagues (2003) a tolerance level lower than 0.1 for any independent variable is indicative of multicollinearity (p. 423).

Table 7

Correlations for all continuous variable correlations at Phase 1 (psychoeducation)

	1	2	3	4	5	6	7	8	9	10
Baseline Internalizing Problems	--	--	--	--	--	--		--	--	--
Baseline Externalizing Problems	.620*	--	--							
Baseline UCLA PTSD,RI	.576*	.407	--							
Technique Competence	-.170	-.291	.012	--						
Nonspecific Competence	-.130	-.102	-.073	.548*	--					
Adherence	-.095	.199	-.133	.170	.079	--				
Engagement	-.388	-.297	-.217	.047	.234	.023	--			
Post session Internalizing Problems	.759	.641*	.489*	-.371	-.107	-.115	-.107	--		
Post session Externalizing Problems	.290*	.627*	.143	-.383	-.097	.040	-.097	.669**	--	
Post session UCLA PTSD RI	.521	.447	.557**	-.157	-.035	-.399	-.035	.737**	.558**	--

Note. N=21; *p<0.025 **p<0.01

Table 8

Correlations of all continuous variables at Phase 2 (skills)

	1	2	3	4	5	6	7	8	9	10
Baseline Internalizing Problems	--	--	--	--	--	--		--	--	--
Baseline Externalizing Problems	.620**	--	--							
Baseline UCLA PTSD RI	.576**	.407	--							
Technique Competence	-.267	.011	.152	--						
Nonspecific Competence	-.185	.031	-.044	.340	--					
Adherence	.113	.081	.001	.401	.217	--				
Patient Engagement	-.264	-.332	-.152	.127	.236	-.207	--			
Post session Internalizing Problems	.536*	.450	.423	-.339	.008	-.203	-.145	--		
Post session Externalizing Problems	.236	.615**	.047	-.156	.189	-.120	-.207	.543*	--	
Post session-UCLA PTSD RI	.517*	.391	.569**	-.220	.161	-.282	-.171	.631**	.339	--

Note. N=21; *p<0.025 **p<0.0

Table 9

Correlations of all continuous variables at phase 3 (trauma narrative and processing)

	1	2	3	4	5	6	7	8	9	10
Baseline Internalizing Problems	--	--	--	--	--	--		--	--	--
Baseline Externalizing Problems	.819**	--	--							
Baseline UCLA PTSD RI	.618	.486	--							
Technique Competence	-.311	-.357	.089	--						
Nonspecific Competence	-.381	-.215	.058	.742**	--					
Adherence	.347	.599	.425	.160	.188	--				
Patient Engagement	-.324	-.634	.022	.448	.120	-.035	--			
Post session Internalizing Problems	.442	.445	.409	-.597	-.570	.332	-.031	--		
Post session Externalizing Problems	.334	.604	.193	-.369	-.453	.595	-.234	.685*	--	
Post session UCLA PTSD RI	.497	.393	.632	-.276	-.352	.415	.047	.767**	.329	--

Note. N=11; *p<0.025 **p<0.01

Clinical characteristics of audio versus nonaudio participants. Results are presented in Table 10. Preliminary analyses were conducted to assess whether there were significant differences on demographic and clinical characteristics of youth who were included in the study because they had audio tapes available (n=21) and youth who were excluded because not have audio tapes available (n=12). Refer to *Figure* 2 for a participant flow chart. Continuous data were examined with *t* tests and categorical data was examined with Chi-square tests of independence. A categorical variable was created for group membership and coded 1= audio tape was available and 0=no audio tape was available.

Results found participants included in the study did not differ in means on youth age $t(31)=0.39$, $p=.70$, between youth who had audio tapes for study inclusion ($M=16.58$, $SD=0.68$) and those who did not have audio tapes ($M=16.48$, $SD=0.90$). The association between participants who had audio available and did not was not significant on gender, $\chi2(1,N=33)=0.64$, $p=.42$, ethnicity $\chi2(3,N=33)=4.42$, $p=.22$, and guardianship $\chi2(4,N=33)=2.75$, $p=.60$. Chi square results yielded only one significant association between group and frequency of an obsessive compulsive disorder (OCD) diagnosis. Participants with audio tapes were more likely to have an OCD diagnosis than participants without available audio tapes. In conclusion, participants included in the current study did not differ on demographic and baseline clinical variables from youth participants excluded from the study.

Table 10

Chi-Squared analysis of demographic and clinical variables comparing the final fidelity sample who had audio tapes (n=21) to participants excluded with no audiotapes available (n=12)

Demographic Variables	Count	Audio *n*(%)	No Audio *n*(%)	*df*	$\chi 2$	*p*
Gender						
Male	19	11(33.3)	8(24.2)	1	0.638	.424
Female	14	10(30.3)	4(12.1)			
Race						
Caucasian	7	3(9.1)	4(12.1)	3	4.417	.220
Black	10	5(15.2)	5(15.2)			
Hispanic	15	12(36.4)	3(9.1)			
Asian;	01	0(0)	0(0)			
Other		1(3)	0(0)			
Guardianship						
Bio Mother	24	16(48.5)	8(24.2)	4	2.750	.600
Bio Father	1	1(3)	0(0)			
Adopted parent	0	0(0)	0(0)			
Relative	4	2(6.1)	2(6.1)			
No guardian	3	1(3)	2(6.1)			
Other	1	1(3)	0(0)			
Baseline DISC- IV Diagnoses						
Agoraphobia						
Yes	15	11(12.1)	4(12.1)	1	1.117	.290
No	18	10(24.2)	8(24.2)			
Conduct Disorder						
Yes	16	9(27.3)	7(21.2)	1	0.732	.392
No	17	12(36.4)	5(15.2)			
Generalized Anxiety Disorder						
Yes	8	7(21.2)	1(3)	1	2.599	.107
No	25	14(42.4)	11(33.3)			
Major Depressive Disorder						
Yes	11	8(24.2)	3(9.1)	1	0.589	.443
No	22	13(39.4)	9(27.3)			

Table. 10 Continued

Mania						
Yes	10	8(24.2)	2(6.1)	1	1.660	.198
No	23	13(39.4)	10(30.3			
Obsessive Compulsive Disorder						
Yes	14	12(36.4)	2(6.1)	1	5.122	.024*
No	19	9(27.3)	10(30.3)			
Opposition Defiant Disorder						
Yes	14	10(30.3)	4(12.1)	1	0.638	.424
No	19	11(33.3)	8)24.2)			
Panic Disorder						
Yes	13	9(27.3)	4(12.1)	1	0.290	.590
No	20	12(36.4)	8(24.4)			
Post-Traumatic Stress Disorder						
Yes	12	8(24.2)	4(12.1)	1	0.075	.784
No	21	13(39.4)	7(24.2)			
Social Phobia						
Yes	10	7(21.2)	3(9.1)	1	0.241	.710
No	23	14(42.4)	9(27.3)			
Specific Phobia						
Yes	6	4(12.1)	2(6.1)	1	0.029	.865
No	27	17(51.5)	10(30.3)			
Comorbid Diagnosis						
Yes	27	16(48.5)	11(33.3)	1	1.229	.268
No	1	5(15.2)	1(3)			

Note: DISC= Diagnostic Interview Schedule for Children Version IV, Bio=biological

Differences in clinical characteristics of youth in the three treatment phases. Separate analyses were conducted for the sample of participants in each treatment phase. Analysis of variance (ANOVA) for continuous data were used to determine whether there were differences on baseline clinical characteristics of youth in the three treatment phases (i.e., phase 1=psychoeducation, phase 2=skills, and phase 3= trauma processing). Three separate one-way factorial analysis of variance (ANOVA) were conducted on baseline clinical characteristics (trauma symptoms, internalizing problems, externalizing problems) with treatment phase as the dependent variables. There was no effect of treatment phase on baseline score measures of youth self-reported internalizing problems, $F(2,50) = 1.70$, $p = 0.83$, externalizing problems, $F(2,50) = 0.07$, $p = 0.93$, or trauma symptoms, $F(2,50) = 0.24$, $p = 0.79$. Overall, F tests revealed no significant differences in means on baseline internalizing problems, externalizing problems, and trauma symptoms at each treatment phase.

Therapist effects. Results are displayed in Table 11. Therapist effects were examined to determine whether youth outcomes scores differed by which therapist delivered treatment, which were evaluated with F tests. A one-way analysis of variance was conducted on youth outcome measures with therapist as the independent variable. Results did not find a significant therapist effect on the three youth self-reported outcome measures of trauma symptoms, internalizing problems, or externalizing problems. However, examination of the effect size, partial η^2, indicated moderate to large effects of therapist on youth outcome measures. F tests were also conducted to determine the effect of therapist on the PRACTICE FiRST fidelity subscales. One-way analysis of variance was

conducted on the PRACTICE FiRST fidelity subscales with therapist as the independent variable. Results suggested a significant effect of therapist, F (7,45)= 5.87, p=0.00 on nonspecific competence with a substantial effect size (η^2=.48). There was not a significant effect of therapist on the technical competence subscale F (7,45)= 2.08, p=.065 or adherence subscale, F(7,45)=1.97, p=.081. These results are normative, given that nonspecific factors reflect individual therapist personality and style in treatment delivery.

Table 11

ANOVA analyses testing for therapist effects on youth post-session outcomes across treatment phases 1, 2, and 3

Predictor	*df*	*F*	Partial eta squared	*p*
Phase 1				
UCLA PTSD, RI	7,13	0.583	.239	.758
Internalizing Problems	7,13	0.641	.257	.716
Externalizing Problems	7,13	0.642	.257	.715
Phase 2				
UCLA PTSD, RI	7,13	.703	.274	.671
Internalizing Problems	7,13	.489	.208	.826
Externalizing Problems	7,13	1.129	.378	.403
Phase 3				
UCLA PTSD, RI	4,6	1.073	.417	.446
Internalizing Problems	4,6	.678	.311	.632
Externalizing Problems	4,6	1.671	.527	.273

Treatment facility effects. Results are displayed in Table 12. Facility effects were examined to determine whether youth outcome measures were significantly different within each of the three correctional facilities. *F* tests were conducted to determine whether youth self-reported post-session symptom severity differed significantly by treatment facility. A one-way factorial analysis of variance (ANOVA) was conducted on youth self-reported post-session symptom severity with facility as the independent variable. Results did not find a significant effect of treatment effect on each of the three youth self-reported outcomes across treatment.

Table 12

ANOVA analyses testing for treatment facility effects on youth post-session outcomes across treatment phases 1, 2, and 3

Predictor	*df*	*F*	Partial η^2	*p*
Phase 1				
UCLA PTSD, RI	2, 18	0.052	.006	.950
Internalizing Problems	2,18	0.559	.058	.581
Externalizing Problems	2, 18	0.705	.073	.507
Phase 2				
UCLA PTSD, RI	2, 18	0.116	.018	.849
Internalizing Problems	2, 18	0.221	.024	.804
Externalizing Problems	2,18	0.125	.014	.883
Phase 3				
UCLA PTSD, RI	1,9	1.173	.115	.307
Internalizing Problems	1,9	1.012	.101	.341
Externalizing Problems	1,9	3.534	.093	.282

Primary Analyses

Research question 1. To what degree does therapist fidelity to treatment relate to the severity of youth ratings of trauma symptoms and internalizing and externalizing problems for incarcerated youth across treatment?

Hypothesis 1a. It was hypothesized that higher fidelity would relate to lower post session youth self reported trauma symptom severity. Specifically, there would be a negative relationship between adherence, technical competence, nonspecific competence, patient engagement, and post session trauma symptoms.

Results 1a. Results of the hypothesis are displayed in Table 13. The hypothesis was not supported and higher treatment fidelity did not significantly predict lower post session trauma symptoms. At phase 1, the null hypothesis was not supported and the fidelity variables did not significantly predict trauma symptoms [R^2=0.461, R^2adj=0.281, F(5,15)= 2.56, p=.072]. Together, the model explained only 28.1% of the variability in post session trauma symptoms in phase 1. At phase 2, the fidelity variables were not related to youth post session trauma symptoms. The full model accounted for 45.3% of the variability in the youth post session trauma symptoms, but contrary to the hypothesized negative relationship between fidelity factors and youth outcomes, nonspecific competency [B = 12.037, β =0.401, t(15) = 2.196, p > .05] was significantly positively related to post session trauma symptom severity.

Table 13

Regression analyses predicting trauma symptoms from fidelity factors (adherence, technical competence, nonspecific competence, and patient engagement) at phase 1 (psychoeducation) phase 2 (skills) and phase 3 (trauma narrative and processing.

	Trauma Symptoms					
Phase 1	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline UCLA PTSD, RI	0.721	0.285	.497	2.533	.022*	.480
Adherence	-7.184	4.517	-.309	-1.590	.132	-.302
Technical Competence	4.614	5.445	-.196	-0.847	.410	-.161
Nonspecific Competence	4.705	6.538	.169	0.720	.482	.136
Patient Engagement	-2.600	3.455	-.151	-0.753	.463	-.143
R^2adj			.281			
F			2.562		.072	
Phase 2	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline UCLA PTSD, RI	0.883	0.251	.604	3.522	.003*	.583
Adherence	-4.686	3.156	-.285	-1.485	.158	-.246
Technical Competence	-4.429	2.803	-.309	-1.580	.140	-.261
Nonspecific Competence	12.037	5.483	.401	2.196	.044*	.363
Patient Engagement	-2.596	2.450	-.193	-1.060	.306	-.175
R^2adj			.453			
F			4.308		.012*	
Phase 3	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline UCLA PTSD, RI	0.815	0.445	.546	1.830	.127	.493
Adherence	9.989	10.810	.281	0.924	.399	.249
Technical Competence	-5.516	10.390	-.254	-0.531	.618	-.143
Nonspecific Competence	-8.793	13.941	-.272	-0.630	.556	-.170
Patient Engagement	3.322	5.6038	.192	0.593	.579	.160
R^2adj			.273			
F			1.753		.276	

Note. s*r* represents the semipartial correlation; N=21 at phase 1 and 2. N=11 at phase 3.

These results indicated when therapists were rated more highly on therapeutic common factors such as warmth, professionalism, pace, and addressed youth concerns, related to higher post session trauma symptom severity. In phase 3, the null hypothesis was not supported, and the fidelity variables in the model were not significantly related to trauma symptoms [R^2=.637, R^2adj=0.273, F(5,5)= 1.753, p=.276] and the model accounted for 27.3% of the variability in trauma symptoms. Unexpectedly, across treatment baseline trauma symptoms accounted for a moderate amount of the variance in post session trauma symptoms. In other words, while controlling for the fidelity variables, there was a moderate relationship between baseline trauma symptoms and post session trauma symptoms. In sum, the hypothesis was not supported and treatment fidelity did not significantly relate to youth self-reported post session trauma symptoms.

Hypothesis 1b. It was hypothesized that higher treatment fidelity would relate to lower youth self-reported post session internalizing problem severity. There would be a negative relationship between TF-CBT adherence, technique competence, nonspecific competence, patient engagement, and youth self-reported post session internalizing problems across treatment.

Analytic strategy 1b. To test hypothesis 1b, a multiple regression was calculated with TF-CBT adherence, technique competence, nonspecific competence, patient engagement, and baseline youth internalizing problems score as the independent variables and youth post session internalizing problems score as the dependent variable. The analysis was conducted for each treatment phase.

Results 1b. Results of hypothesis 1b are displayed in Table 14. Hypothesis 1b was not supported, and higher treatment fidelity was not significantly related to lower youth ratings of post session internalizing problems. At the psychoeducation phase 1, the fidelity variables were not significant predictors for post session internalizing problems. The full model significantly predicted post session internalizing problems [R^2=.679, R^2adj=.572, F(5,15)= 6.349, p=.002], but contrary to hypotheses the higher baseline internalizing problem severity [B = 0.824, β =0.175, t(15) = 4.706, p > .000] was related to higher post session internalizing problem severity. Therefore, above all other fidelity factors, baseline internalizing problems accounted for the majority of the variability in posttreatment internalizing problems. At the skills phase 2, the model did not significantly predict internalizing problems [R^2=.416, R^2adj=.222, F(5,15)= 2.139, p=.117] and the model only accounted for 22.2% of the variability in phase 2 post session internalizing problem scores. Finally, in phase 3, fidelity variables also did not significantly predict post session internalizing problems, [R^2=0.680, R^2adj=0.359 F(5,10)= 2.122, p=0.214], and the model accounted for 35.9% of the variability in post session youth internalizing problem severity. Unexpectedly, while controlling for the fidelity factors, baseline youth internalizing problems accounted for the majority of the unique variance in post session internalizing problems in phase 1 and phase 2.

Table 14

Regression analyses predicting internalizing problems from adherence, technical competence, nonspecific competence, and patient engagement at phase 1 (psychoeducation) phase 2 (skills) and phase 3 (trauma narrative and processing).

			Internalizing Problems			
Phase 1	*B*	*SE B*	*β*	*t*	*p*	sr
Baseline Internalizing Problem	0.824	0.175	0.736	4.706	0.000*	0.688
Adherence	-1.840	1.907	-0.145	-0.965	0.350	-0.141
Technical Competence	-4.119	2.328	-0.320	-1.769	0.097	-0.259
Nonspecific Competence	2.758	2.758	0.181	0.100	0.333	0.146
Patient Engagement	-0.205	1.492	-.022	-0.138	0.892	-0.020
R^2adj			.572			
F			6.349		.002	
Phase 2	*B*	*SE B*	*β*	*t*	*p*	sr
Baseline Internalizing	0.711	0.281	0.546	2.527	0.023*	0.499
Adherence	-2.865	2.418	-0.276	-1.185	0.254	-0.234
Technical Competence	-1.388	2.149	-0.153	-0.646	0.528	-0.127
Nonspecific Competence	4.629	4.148	0.243	1.116	0.282	0.220
Patient Engagement	-0.817	1.839	-0.096	-0.444	0.663	-0.088
R^2adj			.222			
F			2.139		.117	
Phase 3	*B*	*SE B*	*β*	*t*	*p*	sr
Baseline Internalizing Problems	0.214	0.485	0.146	0.442	0.677	0.113
Adherence	11.950	8.223	0.427	1.453	0.206	0.370
Technical Competence	-11.554	7.784	-0.676	-1.484	0.198	-0.378
Nonspecific Competence	-3.440	11.344	-0.135	-0.303	0.774	-0.077
Patient Engagement	4.774	4.415	0.350	1.081	0.329	0.275
R^2adj			.351			
F			2.082		.220	

Note. sr represents the semipartial correlation; N=21 at phase 1 and 2. N=11

Hypothesis 1c. It was hypothesized that higher treatment fidelity would relate to lower youth self-reported post session externalizing problem severity. There would be a negative relationship between TF-CBT adherence, technique competence, nonspecific competence, patient engagement and youth self-reported post session externalizing problems.

Analytic strategy 1c. To answer this question, a multiple regression was calculated with TF-CBT adherence, technique competence, nonspecific competence, patient engagement, and baseline externalizing problem scores as the independent variables and post session externalizing problem scores as the dependent variable. The analysis was conducted at each treatment phase to examine how fidelity relates to post session externalizing problems across treatment.

Results 1c. Results of hypothesis 1c are displayed in Table 15. Hypothesis 1c was not supported and treatment fidelity was not related to post session externalizing problems. The full model did not significantly predict post session externalizing problem scores at the psychoeducation phase 1 [R^2=0.448, R^2adj=0.264, F(5,15)= 2.43, p=0.083], skills phase 2, [R^2=0.487, R^2adj=0.316, F(5,15)= 2.847, p=0.053], or trauma narrative and processing phase 3 [R^2=0.709, R^2adj=0.415, F(5,10)= 2.421, p=0.177]. In sum, the model did not significantly predict externalizing problems in all three treatment phases and the hypothesis was not supported.

Table 15

Regression analyses predicting externalizing problems from adherence, technical competence, nonspecific competence, and patient engagement at phase 1 (psychoeducation) phase 2 (skills) and phase 3 (trauma narrative and processing).

	Externalizing Problems					
Phase 1	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline Externalizing Problems	0.661	0.257	.572	2.577	.021	0.494
Adherence	-0.461	2.559	-.037	-0.181	.859	-0.035
Technical Competence	-3.428	3.191	-.270	-1.074	.300	-0.206
Nonspecific Competence	1.625	3.612	.108	0.450	.660	0.086
Patient Engagement	0.151	1.964	.016	0.077	.940	0.015
R^2adj			.264			
F			2.434		.830	
Phase 2	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline Externalizing Problems	0.742	0.248	.591	2.991	.009	0.553
Adherence	-1.715	2.038	-.180	-0.841	.413	-0.156
Technical Competence	-1.472	1.779	-.177	-0.828	.421	-0.153
Nonspecific Competence	5.091	3.580	.291	1.423	.176	0.263
Patient Engagement	-0.735	1.670	-.094	-0.441	.665	-0.082
R^2adj			.316			
F			2.847		.053	
Phase 3	*B*	*SE B*	*β*	*t*	*p*	s*r*
Baseline Externalizing Problems	-0.203	0.881	-.125	-0.230	.827	-0.056
Adherence	21.303	11.558	.775	1.843	.125	0.446
Technical Competence	0.140	7.195	.008	0.019	.985	0.005
Nonspecific Competence	-15.143	10.266	-.606	-1.475	.200	-0.357
Patient Engagement	-2.899	5.709	-.217	-0.508	.633	-0.123
R^2adj				.415		
F				2.412	.177	

Note. s*r* represents the semipartial correlation; N=21 at phase 1 and 2. N=11 at phase 3.

Research question 2. Are community therapists accurate self-reporters of treatment fidelity? Can therapists identify barriers hindering the therapeutic process?

Hypothesis 2. It was hypothesized that there would be poor interrater agreement between therapist self-reported ratings of TF-CBT adherence and TF-CBT adherence obtained from observational coding of treatment audio sessions

Analytic strategy. Summary descriptive statistics were first conducted to describe the frequency with which each of the treatment elements were reported from both the observer and therapist perspectives. Therapists completed the session update form after each treatment session, and indicated all of the 11 TF-CBT treatment elements they implemented during the session. Treatment elements were only coded as "present" by observation coding for treatment elements implemented >50% of the total session time.

Therapists and observational coders also reported whether one of the following treatment barriers were present: crisis arose, youth nonparticipation, problems with alliance, or "other." Kappa statistics were calculated dichotomizing the presence or absence of a treatment element and reported treatment barriers. For each TF-CBT treatment element and reported barriers, a Kappa statistic quantified the association between therapist and observational coding agreement, with higher values indicating higher agreement between the two informants. This analysis determined whether therapists provided biased estimates of treatment adherence in self-report measures.

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Results 2. The results are displayed in Table 16. Overall, the hypothesis was supported and therapists overreported treatment fidelity and underreported treatment barriers. Kappa statistics therapist were calculated based on the 49 sessions in which both therapist self-report and observational coding ratings of adherence were available. Therapist reports were unavailable for four of the total fifty-three audio sessions analyzed by observational coding.

Only two of the eleven TF-CBT treatment element Kappa statistics were above 0.4, which is the threshold for moderate interrater agreement (Cohen, 1960; McHugh, 2012). The trauma narrative and processing treatment element had the highest value of interrater agreement (κ=0.754) followed by cognitive coping techniques (κ=0.448). These aforementioned kappa statistics were in the "good" range and "moderate" range of agreement respectively. Kappa statistics were unable to be calculated when observational

Table 16

Frequency, percentages, and level of agreement of TF-CBT treatment elements and barriers identified as present by observational coders and therapist self-report

	Observational Coding		Therapist Self Report		kappa
Variable	*n*	*%*	*n*	*%*	
Caregiver Participation	2	4	3	6	.144
Psychoeducation	11	22	22	44	.336
Taught Parenting Skills	0	0	8	16	-
Relaxation	3	6	15	38	.125
Affective Expression and Modulation	2	4	12	24	.071
Cognitive Coping	5	10	13	26	.448
Trauma Narrative	6	12	7	14	.754
In-Vivo Exposure	0	0	1	2	-
Conjoint child-parent session for trauma narrative	0	0	0	0	-
Safety Planning	0	0	1	2	-
Problem Solving	0	0	1	2	-
Crisis Arose	8	16	0	0	-
Youth nonparticipation	8	16	0	0	-
Problems with alliance	9	18	1	2	.169
Other Barrier	10	20	2	4	.285

Note. Total number of sessions for analyses N=49; For blank cells kappa values could not be calculated.

coders or therapists did not report the presence of a treatment element. Kappa statistics were unable to be calculated for four TF-CBT treatment elements (teaching parenting skills, in-vivo desensitization, safety planning, and problem solving) because observational coders observers did not record the treatment element to be present for >50% for any of the 49 sessions. Interrater agreement was therefore estimated to be low because there was zero agreement between the presence/absence of these treatment elements. Agreement on the presence of conjoint parent-child session technique was estimated to be high because both therapists and observational coders rated the technique as "not present."

Agreement between observers and therapists regarding barriers to treatment was low, with observers identifying a barrier almost three times more frequently than therapists. Therapists neither endorsed a "crisis" nor "youth nonparticipation" for any youth; thus kappa statistics could not be calculated for these barriers and agreement considered poor

Summary

It was hypothesized that TF-CBT adherence, technical competence, nonspecific competency, and patient engagement would significantly negatively relate to youth self-reported post session trauma symptoms, internalizing problems, and externalizing problems. Overall, the hypotheses were not supported, and the fidelity variables did not significantly relate to decreased symptom severity. Unexpectedly, higher scores on overall common therapeutic factors related to higher internalizing symptom severity in one treatment phase. Contrary to the hypothesized relationship, higher pretreatment mental health symptom severity significantly related to higher ratings of trauma, internalizing problems, and externalizing problems.

In the second research question, the hypotheses were largely supported. It was hypothesized that interrater agreement between observational coders and therapist self-report of treatment adherence would be poor. There were low levels of agreement on eight of a total of eleven treatment components, with therapists over estimating presence of TF-CBT treatment elements. In comparison to observational coders, therapists underreported treatment barriers, and specifically did not endorse any crisis or youth nonparticipation barriers in any treatment sessions. Contrary to the hypothesis, agreement was moderate to good on the cognitive coping and trauma narrative and processing techniques. In sum, the results mainly support the hypothesis that therapists over-report treatment adherence, and even more so underestimate barriers during treatment sessions.

Discussion

The purpose of this study was to examine the extent therapist treatment fidelity related to Trauma-focused Cognitive Behavioral Therapy (TF-CBT) effectiveness delivered to youth in juvenile residential correctional facilities. Treatment fidelity was comprised of treatment adherence, technical competence, and nonspecific competence. Treatment adherence reflected whether therapists delivered prescribed TF-CBT specific elements; technical competence, reflected how competently or skillfully a therapist delivered the treatment specific components; nonspecific competency reflected the therapist's overall therapeutic skill in interpersonally relating to clients, pacing sessions, and addressing client needs. The study also measured patient engagement, which captured the quality of the reciprocal relationship between the youth and therapist. Patient engagement reflected youth participation and completion of treatment activities, openness with sharing emotions and feelings, and willingness to explore cognitive processes. Treatment fidelity and patient engagement were determined by external review of recorded treatment session audiotapes by trained coders using the PRACTICE FiRST observational coding system. I hypothesized that while controlling for baseline mental health symptom severity, the treatment fidelity components of adherence, technical competence, and nonspecific competence, as well as observational coder ratings of patient engagement would be inversely related to youth self-reported post session mental health symptoms severity. In short, this study proposed that therapist skill and adherence to the TF-CBT treatment would significantly relate to lower youth self-reported post session mental health symptom severity. Treatment fidelity and treatment effectiveness were assumed to be

related; however, this relationship had not previously been examined for the TF-CBT treatment with delinquent youth populations.

The study observed the treatment fidelity of eight community therapists employed by the Texas Juvenile Justice Department who delivered an evidence-based treatment (EBT), Trauma-focused Cognitive Behavioral Therapy (TF-CBT), to twenty-one youth residing in juvenile correctional facilities. Therapists received standardized training and expert biweekly consultation during treatment delivery. Youth were recruited and selected to participate if they experienced a traumatic event and had a diagnosable mental health disorder identified on the Diagnostic Interview for Children (DISC-IV).

Treatment fidelity was measured by the TF-CBT PRACTICE FiRST observational coding measure, and the measure was completed by trained coders based on external review of recorded session audiotapes. Treatment fidelity was measured across treatment in the beginning psychoeducation phase, the middle phase when skills such as relaxation, coping skills, and emotion regulation were taught, and the end of treatment during the trauma narrative and processing phase.

The study results did not support the primary hypothesis that higher treatment fidelity would significantly relate to improved treatment effectiveness. Contrary to the hypothesis, the fidelity variables (treatment adherence, technique competence, nonspecific competence, and youth engagement) were unrelated to youth self-reported mental health symptomology at any treatment timepoint ((1=psychoeducation, 2=skills, and 3=trauma narrative and processing). Not only did the fidelity variables fail to predict treatment effectiveness, but also higher nonspecific competence, also known as therapeutic common

factors, related to higher post session trauma symptoms in the skills phase. In short, general therapeutic skill including warmth and acceptance, proper pacing of sessions to further treatment progress, use of developmentally appropriate materials, and facilitative balance enabling youth exploration such that neither therapist nor youth dominated the interaction, was related to higher self-reported post-session trauma symptoms only for the coded audiotapes from the middle phase of TF-CBT that focused on teaching youth coping skills. Instead of treatment fidelity, the key variable that significantly predicted post-treatment symptoms was pretreatment symptom severity. In each treatment phase, higher baseline symptom severity predicted lower youth self-reported trauma and mental health symptoms. Taken together, these results indicate that therapist TF-CBT treatment fidelity and youth engagement in TF-CBT delivered by community therapists to incarcerated youth do not have a predictive relationship with youth post session symptom severity and may not impact treatment effectiveness.

The current study had several methodological strengths which lend support to the conclusion that increased fidelity does not equate to improved youth outcomes. One notable strength of the current study was measuring treatment fidelity at three separate treatment timepoints to determine whether the relationship between treatment fidelity and outcomes was constant across time; this was critical because some studies have found adherence to diminish across treatment (McLeod et al., 2017). This study, however, found fidelity to improve across time, and average adherence scores were highest in phase 3 of the treatment during the trauma narrative. Despite improved fidelity, adherence still did not correlate with improved treatment effectiveness. A second notable methodological

strengths was the use of a validated observational coding system (PRACTICE FiRST), which examined treatment delivery with a higher level of precision and accuracy than other fidelity measurement tools such adherence checklists or global one-item competency scores frequently used in fidelity studies. The PRACTICE FiRST measure detected both the specific content and process of treatment delivery—capturing fidelity at the molecular level. Observational coding was a more precise and accurate fidelity measurement tool than adherence checklists and global one item therapist competency ratings. Even with more sophisticated measurement fidelity measure at the molecular level, however, there was not a relationship between fidelity and treatment outcomes.

A secondary aim of the study was to examine how therapists' self-reports of TF-CBT treatment adherence ratings and treatment barriers corresponded with observational coders' perspectives. Research consistently has found community therapists to overestimate the extent that they employ prescribed treatment elements (Hoguet et al., 2015; Hurlburt et al., 2010). For the second research question, it was hypothesized that therapists and expert observational coders would have poor inter-rater agreement on therapist treatment fidelity and treatment barriers. Therapists in the TF-CBT feasibility study completed a session update form after each therapy session, indicating which prescribed PRACTICE components they implemented and describing any treatment barriers they experienced. Observational coders listened to treatment session audiotapes and rated a treatment component as "present" when the therapist employed a strategy for over 50% of the treatment session. In order to effectively disseminate EBTs in community settings, it is important to understand how to efficiently, reliably, and cost-effectively

monitor fidelity. Results supported the hypothesis; therapists and observational coders had weak interrater agreement on both TF-CBT PRACTICE treatment elements and reported treatment barriers. Observational coding better captured accurate and valid information about the amount of time devoted to specific skills. Despite therapists receiving training and ongoing supervision, they overreported the thoroughness of treatment delivery and underreported treatment barriers.

Therapist Treatment Adherence Does Not Relate to Treatment Effectiveness

The most compelling finding of this study was that treatment fidelity did not predict treatment effectiveness. There was not a significant relationship between treatment fidelity and post session symptom severity. Specifically, adherence, technical competency, nonspecific factors, and youth engagement did not significantly relate to post session trauma symptoms, internalizing problems, or externalizing problems. To illustrate, even when youth were attentive and actively participated and therapists implemented TF-CBT as prescribed with high levels of skillfulness, warmth, appropriately paced sessions, and attention to client needs, these factors were not statistically significantly associated with youth as a group rating themselves with lower mental health severity scores after the session. The only significant predictor of post session symptomology, even when controlling for the above effects of fidelity, was baseline mental health symptom severity. Higher baseline symptomology in youth was associated with higher self-reported ratings of their mental health symptoms over the course of treatment.

I propose that the complexity of the population and treatment setting may contribute to the null results why therapist fidelity did not significantly predict lower symptom

severity. Overall therapists delivered intervention strategies with high adherence and moderate competence suggesting treatment fidelity was not an iatrogenic effect significantly contributing to the nonsignificant relationship between treatment fidelity and youth self-reported mental health outcomes. Mental health symptom comorbidity was the norm, with over two-third of the youth sample meeting criteria for two or more mental health diagnoses. Most striking, over 50% of the sample met criteria for obsessive compulsive disorder (OCD), and the prevalence of OCD in pediatric community samples only ranges from 1% to 3% in community samples (Valleni-Basile et al., 1998*)*. Even more remarkable, the majority of the sample (66.6%) met criteria for four or more mental health diagnoses. These youth also experienced multiple chronic, interpersonal traumas over their life lifetime. When identifying the most distressing trauma, youth identified more recent traumas that often included an event connected with the crime that resulted with their incarceration. Youth were less likely to identify events that occurred when they were younger and tended to have less awareness of how these early trauma experiences may have impacted them. These trauma experiences, and therapists needed to correct distorted cognitions that their early trauma exposure were normative.

Youth in the facilities also had limited access to some of the activities and coping skills that many youth find helpful to reduce anxious feelings, manage distress, or distract themselves from strong emotions. Therapists frequently taught youth prescribed strategies for relaxations, such as using imagery, progressive muscle relaxation, and breathing techniques, and many youth benefited. Outside of TF-CBT sessions, the youth were generally not able to move to a quiet location and had to find discrete ways to use the skills

without gaining attention by peers or staff. Youth did not have access to music, exercise, or other strategies that youth find helpful for emotion regulation. Some youth were granted access to use case manager's office, but this was dependent on the staff availability and what was occurring on the unit at the same time. Facility administration attempted to create safe places for youth on the unit stocked with coping tools, but the practice was not sustained when youth uprisings led to increases in more restrictive practices. The staff struggled to find a way to allow increased youth flexibility to use the coping strategies while still maintaining the security of the unit and ensuring the privilege was not abused.

TF-CBT is primarily used with youth are in safe environments, where children may be responding to trauma triggers as if they remain in danger. TF-CBT focuses on desensitizing youth to trauma triggers and helping youth reduce hypervigilance. For youth in correctional facilities, some vigilance can be protection. Moreover, the congregate nature of correctional facilities does increase the risk for physical altercations and youth may need to present as tough to be respected by their peers. The challenge for the therapists implementing TF-CBT was balancing how to support a youth in reducing hypervigilance, which can put a youth at risk by misreading cues in the environment, with ensuring an appropriate level of safety monitoring and planning.

Taken together, the results of the study are not surprising. The focus of trauma treatment such as TF-CBT is on building youth coping skills, strengthening the caregiver and youth relationship, and processing previous trauma experiences. The high degree of comorbidity and structure and more restricted social experiences within the facility, may constrain the positive treatment effects commonly associated with TF-CBT among

outpatient adolescent populations. Although the effectiveness of TF-CBT did not positively relate to a reduction in youth reported mental health outcomes while incarcerated, the long-term benefits when youth return to their communities warrants exploration. It is possible that the benefits of TF-CBT are more likely to be evidenced when the youth returns to their home and community with greater opportunity to practice skills learned in treatment.

The null results of this study that found no relationship between treatment fidelity and youth reported post-session mental health outcomes adds to a field of mixed findings (Huey et al., 1998; Webb et al., 2010; Liber et al., 2010; Loeb et al., 2005). Results of this study are consistent with the only meta-analysis examining the adherence-patient outcome and competence-patient outcome relationship found that variability in patient outcomes due to the aforementioned factors was close to zero (Webb et al., 2010). The metanalysis included key studies both supporting and negating treatment fidelity as a central variable to treatment effectiveness. Prior research, using similar observational coding procedures to measure treatment fidelity, found no relationship between adherence and outcomes in cognitive behavioral therapy for adolescents with eating disorders (Loeb et al., 2005). There was also not a relationship between adherence and outcomes in a randomized controlled trial examining differential effectiveness of individual and group cognitive behavioral therapy for youth with anxiety disorders (Liber et al., 2010). Taken together the results of these studies suggest treatment adherence may not enhance treatment success in the real-world.

In contrast, other youth studies have found a relationship between treatment adherence and treatment effectiveness, and concluded higher treatment adherence was associated with reduced mental health symptom severity (Hennegler et al., 1999; Hogue et al., 2008; Huey et al., 1998; Campos-Melado et al., 2017). Several studies have found a curvilinear relationship between treatment fidelity and treatment outcomes (Barber et al., 2006; Hogue et al., 2008) and concluded intermediate levels of treatment adherence produce the best outcomes. The rationale for the curvilinear effect of adherence posits that when therapists are more adherent to the protocol they lack the flexibility and creativity to respond to the client's needs; however, when therapists deviate too much from the protocol they do not deliver the key active treatment components. Moderate adherence translates to therapists delivering manualized interventions flexibly such that they retain core treatment components, but implement the treatment in a way that is responsive to the clinical situation.

Even when research has found a significant relationship between fidelity and treatment effectiveness, the relationship is only significant for parent report (Hogue et al., 2008). This study used only youth ratings on validated measures of symptom severity, and no ratings were gathered from caregivers or external observers. The findings of the current study are consistent, therefore, with prior research that has largely failed to find a consistent relationship between treatment fidelity and youth self-reported symptom severity. Nevertheless, we do not want to erroneously conclude that there is not a relationship between fidelity and treatment outcome but rather reporter effects may contribute to the mixed findings in research, as well as in this study.

Competence Does Not Relate to Treatment Effectiveness

Although the primary focus of this study was the relationship between treatment adherence and treatment effectiveness, the results also supported the weak relationship between therapist competence and youth outcomes that has been established in the literature (Barber et al., 1996; 1997; 2000; Campos-Melody et al., 2017; Hogue et al., 2008). The study's findings also did not support a relationship between technical and nonspecific competency and improved outcomes; thus, even when a therapist was rated by external coders to deliver a treatment element with a high level of skillfulness, this rating was not related to improved outcomes. Although consistent with previous studies, a possible explanation for the failure to detect a significant relationship between therapist competence and youth outcomes may be due to the lack of variability in therapist competence scores. Therapists were nominated to participate in the study and underwent extensive training and ongoing supervision; all were rated as moderately or fairly competent in both the delivery of TF-CBT PRACTICE techniques and overall therapeutic skills. With small variability in technical and nonspecific competency, an effect would have been hard to detect.

Nonsignificant findings may also reflect that the treatment (TF-CBT) was not effective for the intended population regardless of how skilled were the therapists. Research has not studied the effectiveness of TF-CBT for incarcerated youth in residential correctional facilities. Only one known study examined TF-CBT for juvenile youth in residential treatment centers, and 37% of the youth in the sample continued to meet criteria for PTSD diagnosis at treatment completion (Cohen et al., 2016). Trauma-focused

treatments do have a nonresponse rate between 25%-50% (Brady, Warnock-Parks, Barker, & Ehlers, 2017). This is a difficult population to treat and regardless of how effective are the therapists, the treatment may not be adequate to produce a measurable change.

Therapists Continue to Overreport Treatment Adherence

The secondary aim of the study was to examine how accurately therapists report treatment fidelity. Overall, therapists overestimated the frequency with which they used treatment elements. There was also poor interrater agreement on treatment barriers, with therapists either underreported or not identifying treatment barriers. The study results are consistent with prior research on concordance of therapist self-report and expert-observer adherence (Carroll et al. 1998; Hurlburt et al., 2010). In contrast, Hogue et al., (2014) found therapists were consistent in reporting multidimensional family therapy techniques. However, the therapist participants were trained graduate students in clinical psychology who had more training, supervision, and internal motivation to reliably detect treatment adherence. Overall therapists in the community do not provide reliable estimates of their treatment delivery. Clinical supervision that focuses on guiding therapists to accurately self-assess session content may be one way to improve reliability of therapist self-report fidelity measurement.

In contrast with the poor interrater agreement on treatment elements and barriers, observational coders and therapists had excellent agreement on adherence to the trauma narrative and processing. One reason for the contrary results may be that the trauma narrative is a distinctive TF-CBT treatment element which differentiates it from other cognitive behavioral therapies (Chorpita and Daleiden 2009). Although other TF-CBT

treatment elements contain gradual exposure to the trauma, the trauma narrative and processing element is more extensive and intensive exposure than prior treatment elements. As such, the trauma narrative may have been more clearly and easily detected by both therapists and coders. A second reason for weak interrater agreement may that therapists were instructed to report every treatment strategy implemented during session regardless of how much time spent on the skill. Conversely, observational coder adherence ratings were only included in this analysis if a treatment element was delivered for 50% or more of the total session length. Regardless, therapists greatly underestimated the number of identified treatment barriers in comparison to observational coders.

In short, based on the results of this and previous studies, if we want to make claims about the effectiveness of a treatment, we can't rely on the self-report of the therapists who provide the treatment as it is inaccurate. Although observational coding is laborious, therapist self-report measures, although efficient, do not represent reliably how treatment is delivered. Given that therapists are poor reporters, self-report measures also have limited utility when therapists make adaptations to fit the clinical needs of the patient. These results of this study suggest treatment should be monitored by external evaluators who carefully review and monitor the treatment, such as supervisors requesting short treatment segments to review with therapists.

Limitations

The present study had several limitations that should be considered when interpreting the results.

Statistical Limitations. Research conducted in the "real world" violates the key statistical assumption of independence (McCarthy, Whittaker, Boyle, & Eyal, 2017). Statistical independence assumes the effects of one person do not influence others in the sample. In the current study, youth were nested within three juvenile correctional facilities; thus, youth participants may have been influenced by the direct staff with whom they had positive and negative encounters, as well as by the overall climate of each juvenile correctional facility. However, the results did not find youth outcome scores to be more correlated by facility. Youth were also nested within therapists. The violation of independence is vital to note, because the study examined the variability of each therapist's ability to deliver an intervention and its relationship to youth self-report outcomes. As suggested by McCarthy and colleagues (2017), researchers should address the clustering structure in the data by calculating an intraclass correlation which represents the proportion of variance in the outcome variables due to the clustering effects (p. 8). Calculation of the intraclass correlation (ICC) did suggest that there was a therapist effect on youth reported internalizing symptoms (ICC=.053), externalizing symptoms (ICC=0.625) and trauma symptoms (ICC=.149). Therefore, youth self-reported trauma symptoms were more highly correlated among youth who had the same therapist.

Another study limitation was the small sample size, which is proportionately related to power; smaller sample sizes inherently lack adequate power to detect small effects. Even though the hypotheses were not supported, there may have been a small effect that was not detectable. Larger sample sizes allow researchers to assume that the sample population

distribution more precisely matches the normal curve, thus allowing more statistically sound hypothesis testing.

Measurement Limitations. The study had several measurement limitations. Observational coding, using the PRACTICE FiRST instrument, measured treatment adherence based on dosage, or the amount of time therapists spent delivering a broad TF-CBT treatment element. Measuring adherence as dosage may not adequately reflect true adherence to a protocol, because therapists received a high adherence score if they spent over fifty percent of the session time on any TF-CBT treatment component, regardless if they omitted specific elements. To illustrate, a therapist who implemented relaxation skills by teaching multiple types of relaxation techniques for over 50% of the session received a "5," which is the highest adherence rating. The adherence rating scale did not reflect how the therapist omitted key ingredients for relaxation including the rationale for relaxation training (e.g. how stress affects physiological responses), the different types of stress, and why youth need to practice relaxation consistently outside of therapy sessions. These steps are necessary both for relaxation buy-in and to help youth understand how they can increase control of their own emotional responses. The adherence measurement did not accurately measure the correct does of the intervention because amount of time spent on a technique did not differentiate between good and poor treatment adherence. Instead, if adherence was defined as therapist thoroughness to treatment elements, or the detail which the therapist covered the technique, would better differentiate between therapists who have high or low levels of treatment adherence to a protocol.

The current study also did not record when therapists used nonprescribed treatment strategies such as psychodynamic interventions, interpersonal therapy, or supportive processing therapy techniques. The recorded treatment barriers reflect some of the occasions when therapists deviated from treatment and used interpersonal supportive therapy techniques; however, the study neither systematically coded all the nonprescribed techniques used nor the amount of time (dose) spent on these treatment elements. It would be important for future research to differentiate whether deviations from the protocol reflect therapists adapting to meet patient needs that might increase treatment effectiveness, or whether these deviations hindered adherence and consequently treatment outcomes.

Implications for Implementation and Dissemination Research

Implementation and dissemination (D&I) studies have focused on bridging the research-practice gap to make the conditions of research trials and usual care more similar, yet treatment outcomes have not improved (Weisz et al., 2017). The results of this study suggest that future D&I research should focus on the measurement of and understanding of effective adaptations of EBTs. Rather than "adopting" and preserving existing EBTs, efforts should focus on "adapting" EBTs for diverse contexts in response to patients' developmental and cultural needs (Malti, Noam, Beelman, & Sommer, 2017, p. 828). In fact, an exclusive focus on fidelity may be counterproductive; efforts should also be made to focus on the factors that influence providers' clinical decision-making processes. Overall, RCTs attempt to package interventions and "reduce real-world complexity" by minimizing variables, confounds, and complexity of clients; this simplification is at exact odds with the real world (Ghate, 2017, p. 822), where complexity and confounds are the

norm. The point is not to criticize RTCs, as they help determine effective treatments, but rather we need alternative approaches that are better at taking real-world client complexity into account. Treatment acceptability and feedback should include the patients' concerns (or consumers) for whom the intervention is intended. Patients can provide feedback on local adaptations that fit within their developmental and cultural contexts.

Study results support important conclusions for the implementation research model (*Figure* 1). First, the model proposed that the deliberate implementation strategies need to be conceptualized and evaluated by implementation outcome measurement separately from treatment outcomes. Evaluation of implementation outcomes (e.g. fidelity) distinguish whether treatments fail due to poor implementation or treatment failure. Research journals should require EBT effectiveness trials to report both on implementation effectiveness and also treatment effectiveness. The strategies should be described in sufficient detail so that they can be observed, replicated, and examined in multiple contexts. Currently, information about implementation strategies is largely based on case studies or highly rigid randomized controlled trials (Glasgow et al., 2011). Measuring implementation outcomes and EBT treatment outcomes together will allow researchers to make data-driven comparisons of different implementation strategies and how they relate to the overall treatment failure or success. Doing so may most importantly increase the external validity of EBT treatment processes to more diverse community settings where the majority of youth receive mental health services. Relatedly implementation strategies may need to systematically target multiple multi-levels of change. Although individual therapist treatment fidelity may be important, the individual effect of therapist fidelity to a protocol in complex settings may

not be potent enough to enhance overall treatment effectiveness. While individual therapist knowledge, skill, and expertise are important, implementation strategies may also need to concurrently target the underlying systems therapists are embedded such as group coordination, organization structure, and the larger environment such as legal and regulatory processes.

Similar to adapting treatments, implementation should also adapt research methodologies to fully understand how interventions work in the real world. Statistical analyses, such as *t*-tests, ANOVA, and meta-analyses, examine group differences but fail to detect idiographic effects. One potential area of improvement is mixed methods research. A mixed methods approach that combine both quantitative and qualitative data analyses is posited to provide better understanding than either approach alone (Palinkas et al., 2008; Proctor et al., 2009). Qualitative approaches also capture the idiographic experience by people in their own terms and considers participant's perceptions as a key process consideration (Palinkas et al., 2011, p. 48). Qualitative approaches provide more depth of information than quantitative methods, whereas quantitative methods provide the ability to test hypotheses. (Palinkas et al., 2011; Palinkas, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011). Mixed methods research may help elucidate the mechanisms for how EBTs work in community settings.

Implications for Research with Juvenile Justice Youth

The study examined TF-CBT fidelity on an often-neglected, high-risk population: incarcerated youth. This population has been shown to experience a significant, disproportionate number of adverse events to youth relative to the general population

(Espinosa, Sorenson, & Lopez, 2013; Sedlak & McPerson, 2010; Shufelt & Cocozza, 2006; Teplin, et al., 2002). The majority of youth in the current study had a comorbid diagnosis; fewer than one-quarter of participants had one diagnosis, and the remainder had between two and eight diagnoses, highlighting their substantial need for effective mental health treatments. The most recent meta-analysis of over 447 studies spanning 30,431 young people included only ten trials examining the effects of psychotherapy on youth with multiple problems, and the results found that psychotherapy did not provide treatment benefits for multiple presenting problems (Weisz, et al., 2017). The aforementioned findings are critical to note because large-scale metanalyses continue to find that psychotherapy is not effective for youth with pervasive co-occurring problems, and comorbidity is the norm for youth embedded in the juvenile justice system. Research needs to focus on how to provide effective treatment for juvenile justice youth with co-occurring mental health and trauma experiences residing in correctional facilities.

Implications for Practice

Treatment barriers and patient engagement. The study reported treatment barriers unique to juvenile correctional facilities that diluted treatment effectiveness. Studies demonstrate that treatment barriers prevent youth from participating fully in therapy, and consequently these same youth do not experience positive therapeutic change (Becker et al., 2017; Kazdin, & Wassel,1999; Kazdin, 2016). Treatment barriers were common, and thirty-one barriers were reported in a total of 53 coded audio sessions. These barriers were a mix of perceptual barriers (e.g. difficulties with alliance, youth nonparticipation) and concrete barriers (e.g. upcoming court processing) that were unique

to correctional facilities. The majority of the barriers, eleven total, were youth nonparticipation, seven were due to an emergent crisis, nine were difficulties with alliance, and five barriers were reported as "Other." Barriers categorized as "other," included therapist and youth discussions of upcoming court processing hearings, therapist addressing physical and verbal altercations the youth had with direct staff and peers, and conversations about youths' future quality of life after incarceration or prison. Treatment barriers were observed to reduce treatment adherence and technical competence for the delivery of TF-CBT techniques in the following way. Therapists deviated from the protocol to address and process patient needs, which reduced overall adherence and technical competence scores. Additionally, youth nonparticipation and problems with establishing a therapeutic alliance prevented youth from fully benefiting from the treatment, regardless if the treatment was implemented with high adherence and technical and nonspecific competence. Ironically, therapist skill in patient-centeredness, that is, addressing directly the barriers of incarcerated youth, weakened treatment adherence constraining therapeutic gains.

The study included a measure of youth participation because it was hypothesized that juvenile justice youth would be more difficult to engage, and more reluctant to share their trauma narrative. Reasons hypothesized for lack of engagement were distrust of therapists, poor interpersonal attachments, and possible desensitization to trauma such that incarcerated youth consider their trauma experiences as "normal." Overall, in this study youth were rated as slightly defensive, and were guarded when sharing and processing their narratives. These indicators of lower patient engagement may have hindered a youth's

ability to fully benefit from the treatment elements, and youth may have been less likely to use the skills when faced with trauma triggers or emotion dysregulation.

Supervisors and therapists should continuously during treatment strive to identify and address treatment barriers and lower level of patient engagement. Therapists should also pause therapy manual content, and use techniques such as motivational interviewing to explore youth ambivalence to treatment or psychoeducation techniques to facilitate conversation between therapists and youths about underlying beliefs (e.g. mental health stigma, prior therapy experiences) related to the treatment barriers and engagement.

Treatments designed for special populations of youth should address the multiple systems in which youth are embedded. The current study results found that neither TF-CBT treatment fidelity nor therapist skill were related to self-reported youth symptom improvement. It is proposed that the complexity of both the proximal and distal factors that influence youth in juvenile correctional facilities demands more complex systemic interventions, such as the conceptual framework in Multisystemic therapy (MST) (Henggeler, Melton, & Smith, 1992). MST is a treatment designed for delinquent populations that has been evaluated for efficacy and effectiveness in multiple studies with a range of research designs that have been conducted by both Henggeler and independent researchers (Baglivio, Jackowski, Greenwalk, & Wolff, 2014; Glisson et al., 2010; Timmons-Mitchell, Bender, Kishna, & Mitchell) to name a few. Multisystemic therapy has the largest body of evidence to reduce youth delinquent, antisocial behavior and addresses youth conduct problems as a network of systems including family, peers, school, and neighborhood (Henggeler, Melton, & Smith,1992; Little, Campbell, Green, & Toews,

2005; Schoenwald, Henggeler, Brondino, and Rowland, 2004). Studies have found MST works to promote positive social behavior by changing how youth function in natural settings. Rather than a direct relationship, therapist treatment adherence to a multisystemic therapy protocol has been found to be associated with improved family relations (family cohesion, family functioning, and family monitoring) and decreased delinquent peer affiliation. In turn the changes in broader systems and the environment mediated decreased delinquent behavior (Huey et al., 2000). In several MST studies, higher treatment adherence was related to decreases in delinquent behavior and externalizing problems for treatments delivered to adjudicated offenders and their families (Henggeler, 1997; Huey et al., 2000), which is important because this population most closely mirrors the sample in the current study.

The current study evaluated therapist behavior and treatment fidelity within the therapy session. It did not examine how youth function and modulate their trauma responses outside of the therapy session. Given the population and setting it is more likely that treatment effectiveness of TF-CBT is mediated by the social ecology in which the youth is embedded. Symptom improvement occurs when positive changes occur in a youth's multiple interconnected systems including family, peers, community, cultural, and immediate environment. Trauma treatment for incarcerated youth should work to create trauma informed environments and systems within correctional settings to promote the practice of adaptive responses to trauma triggers and symptoms. Perhaps, trauma treatments delivered in juvenile correctional facilities should work to adapt the MST framework to include building youth coping skills, strengthening caregiver and youth

relationships, processing previous trauma experiences, providing opportunities for youth to develop prosocial skills, and increasing caregiver competency in the provision of environmental structure when youth return to the community.

Developing a Trauma-informed Juvenile Justice System. Treatment implementation strategies for youth in the juvenile justice systems may associate with better outcomes when these target systems level, as well as individual level, interventions, including an organizational cultural shift through trauma-informed care (TIC). Meeting the needs of incarcerated youth with complex trauma histories requires integrated systems working together, including coordinated mental health and substance use services, school and community supports, court processing, social and child protective agencies, and law enforcement, to name a few. Thus, a cultural shift needs to occur through changes in laws and policies; only at this systemic level can communities provide increased interventions and diversion programing for youth with behavioral health needs.

Essential elements of overall trauma-informed care include all staff in correctional facilities understanding the widespread impact of trauma; recognizing signs and symptoms of trauma; responding by integrating trauma knowledge into policies, procedures, and practices; and working to resist retraumatization (SAMHSA, 2018). Within juvenile correctional facilities, key strategies for developing a trauma-informed juvenile justice system include implementation of trauma-informed policies and procedures sensitive to disparities and diversity; identification and screening; training and programming for staff; prevention and management of secondary traumatic stress; and partnering with families. The following paragraphs describe recommendations for correctional facilities.

Routinely train all correctional staff on trauma informed care. A trauma-informed juvenile justice system requires collaborative integration among all staff members. The current study focused on the behavior of employed psychology staff, but did not explicitly address practices of other direct staff who had more frequent interactions with the youth participants. Prior to the effectiveness trial from which the data were drawn, the principal investigator developed a brief curriculum for the psychology employees to deliver during all-staff meetings. The therapists reported variability in level of acceptance and interest in trauma-informed education. Some staff may have been more punitive towards youth for acting out physically, verbally, and rule-violations, rather than considering that youth may have been behaving in response to trauma's impact on their affective, cognitive, and sense of safety. Processing the trauma narrative can lead to increased emotion regulation, and additional training for staff could mitigate punitive punishments that may negatively reinforce youth maladaptive behavior and weaken the use of adaptive coping skills learned in therapy. Additionally, training should occur routinely to address staff turnover or staff transitioning to different facilities.

Create adaptive environmental reinforcement. Incarcerated youth are constrained by the limitations of their environment. One consequence of these constraints is retraumatization due punitive sanctions (e.g. being sent to security), which may invoke reactive aggression and distrust, thereby worsening trauma response (National Center for Mental Health and Juvenile Justice, 2016). Therefore, youth may have internally developed emotion regulation techniques or skills, but outside of their therapy session, they may have received punishments or reprimands that worked against the aims of therapy by leading

them to re-experience their traumas. Direct staff can help youth with affect regulation in a behavior chain sequence analysis for refocusing when incarcerated youth have trauma reactions. For example, an EBT trauma focused TARGET program (Frisman, Ford, Lin, Mallon & Chang, 2008; Ford, Chang, Levine, & Zhang, 2013) can be taught and implemented by correctional facility direct staff to guide youth in the following practices: a) cultivate awareness of trauma reactions, b) recognize triggers, c) focus, self-monitor, and slow down, and d) distinguish between trauma-triggered goals and adaptive goals. For youth who have experienced physical or sexual abuse, TF-CBT explicitly states that treatment is not appropriate for youth who still are in their abusive environments (Mannarino, et al., 2017). This tenet may also apply to incarcerated youth who are also subject to reexperience traumas based on their setting. Incarcerated youth have fewer freedoms to utilize the coping skills often recommended in TF-CBT treatment (e.g. listen to soothing music, take a walk, go to a quiet place, play with pets, draw, take a relaxing shower). To provide trauma-informed juvenile justice system framework, correctional facilities should develop policies that provide youth with opportunities to use their coping tools so they can better understand how they may modulate emotional and physiological arousal.

Summary

The purpose of this study was to examine the relationship between therapist treatment fidelity to Trauma -focused Cognitive Behavioral Therapy (TF-CBT) delivered to youth in juvenile residential correctional facilities and youth treatment outcomes. This study found that higher treatment fidelity to the manualized TF-CBT protocol did not relate

to a reduction in youth self-reported symptom severity across treatment. Instead of treatment fidelity, the key variable that predicted post-treatment symptoms was pretreatment symptom severity. These findings add to the inconclusive whether higher treatment fidelity enhances treatment effectiveness. A secondary aim of the study was to examine how therapists' self-reports of TF-CBT treatment adherence ratings and treatment barriers corresponded with observational coders' perspectives. Consistent with prior research, therapist do not reliably report treatment delivery. Substantial research is still needed in the area of implementation research to verify the relationship between treatment fidelity and outcomes across settings, treatments, and informants. Mixed methods research is one promising methodology that can elucidate on treatment processes in usual care settings that are not captured by quantitative methods. Also, effectiveness trials examining EBTs delivered in usual care should use multiple informants of treatment outcomes and report on both implementation outcomes and treatment outcomes, so that comparisons can be made about the effectiveness of various implementation strategies.

The findings of this study have the potential to advance understanding of effective trauma treatments for incarcerated youth in correctional facilities, an advancement that is much needed to address the disproportionate rates of PTSD and trauma related disorders of delinquent youth. TF-CBT treatment delivery was not related to youth reported symptom severity, and increased therapist fidelity did not enhance treatment effectiveness. Effective treatments for incarcerated youth may require implementation strategies that target the broader systems youth are embedded such as training all correctional staff on widespread effects of trauma and developing trauma sensitive policies.

Appendices

Appendix A: Description of Participants, Instrumentation and Procedures of TYC feasibility and effectiveness trial

TYC Study

Participants.

Youth participants. A total of 57 youth was in the total sample, with 24 on the waitlist control and 33 in the TF-CBT treatment group. Youth ranged in age from 14-18 years old (M=16.5, SD=0.09) and 31% of the youth were female (n=18). The ethnic composition was comprised of 45.6% as Latino/Hispanic, 36.8% identified as Black, 16% identified as White, and 1.8% identified as Other. The majority of youth were under the care of their biological mother (64.8%) or father (5.6%) and the remainder of youth (16.7%) had a non-parent relative as their guardian. Results of the DISC-IV measured psychological symptoms at baseline during the TYC study. Youth met criteria for an average of four of the eleven diagnoses assessed. It was expected that many youths would meet criteria for conduct and/or oppositional defiant disorder, and these were the most common diagnoses. Both disorders were reflected in 26 (45.6%) youth and 17 met criteria for both disorders. Youth also met criteria for a variety of anxiety and mood disorders, thought to possibly be related to trauma exposure. The symptoms of agoraphobia, obsessive compulsive disorder, and panic disorder were more commonly reported. Of the final sample in the TYC study, 35.1% had major depressive disorder, 24.6% had mania, 36.8% had posttraumatic stress disorder (PTSD), 22.8% had GAD, 22.8 had a specific

phobia, 26.3% had social phobia, 49.1% had Agoraphobia, 42.9% had OCD, and 43.4% had panic disorder.

On average youth were exposed to an average of 7.23 different traumas with a range of 2-12 trauma types. The majority of the sample reported witness community violence (91.2%) and (89.5%) reported being physically attacked or threatened in the community. Youth reported exposure to natural disasters (59.7%), bad accident (42.1%), exposure to war (31.6%), physical abuse in home (49.1%), witnessing physical violence in the home (63.2%), physically attacked or threatened in the community (89.5), witnessing community violence (91.2%), seeing a dead body in town (66.7%), sexual abuse (38.6%), traumatic death or injury of a loved one (84.2%), traumatic medical treatment in hospital (43.9%), or other traumatic event (63.2%).

Participants reported severe levels of PTSD on the UCLA-PTSD, PI (*M*=39.7, *SD*=10.3). Thirty five youth (61.5%) scored 38 or above on the total symptom score, which is the clinical cutoff for diagnosis of PTSD. On the YSR at entry, 64.9% of youth had elevated scores within the clinical range for internalizing symptoms and 56.1% scored in the clinical range for externalizing symptoms indicating areas of concern.

Therapist participants. There was a total of ten therapists who enrolled and remained in the TYC study at three different facilities. This included three therapists at Brownwood, two therapists at McClennan, and five therapists at Giddings. The majority of therapists had a master's degree (83.3%) and two had a doctoral degree in psychology (17.7%). Seven of the providers (58.3%) had a clinical license, with two licensed in psychology, four licensed as professional counselors, and one with an intern license in both professional

counseling and chemical dependency counseling. Experience providing therapy services varied ranging between six months and twenty-six years (*M*=8.13, *SD*=8.12). The majority of therapists (75%) reported having "a lot" of knowledge with cognitive behavioral approaches and 50% of the providers had received training in TF-CBT prior to the TYC study. Four therapists (33.3%) were younger than age 30, four therapists (33.3%) were between 31 and 50 years old, and four (33.3%) were age 51 or older. The ethnic composition was predominately white (*n*=11) and one therapist declined to answer. Demographic information was obtained from a web-based survey, and three therapists in the final group did not respond.

Instrumentation.

Diagnostic interview schedule for children, 4th edition. The Diagnostic Interview Schedule for Children (DISC-IV, Fisher, Lucas, Sarsfield, & Shaffer, 2006) is a structured psychiatric diagnostic interview for children and adolescents aged 6 to 18, or their parents (Shaffer et al., 2000). It was developed primarily for epidemiological research but is also useful in clinical settings. The most recent version of the DISC (DISC-IV) addressed 36 common mental disorders common in youth psychiatric diagnoses that occur in youth based on DSM-IV criteria. The DISC can be administered by trained lay interviewers. Most questions are worded so that they can be answered "yes", "no", and "somewhat" or "sometimes." The DISC-IV assesses past year and current (prior month) prevalence of symptoms. The computerized youth version of the instrument was used in the TYC study.

Traumatic events screening inventory, self-report revised (TESI-CRF, *Ford & Rogers, 1997).* The TESI is a clinician administered, structured interview to screen for

traumatic experiences in both clinical and research settings. The interview assesses sources of trauma including witnessing severe accidents, illness or disasters, family or community conflict or violence, and sexual molestation. The interview is comprised of 15 questions. It also includes follow-up scripts to determine severity of trauma and the youth's appraisal of the potentially traumatic incident. Answer responses include "Yes," "No," "Unsure," "refused," and "Questionable Validity." The measure can be scored by totaling the number of experiences or scores can yield indices describing exposure to nonviolent (i.e., accidents, disasters, illness, and direct victimization traumas (i.e. assaults, community, or family violence, abuse). The TESI-CRF has been found to have inter-rater agreement ranging from κ= 0.73 to 1.00 obtained from a sample of children and parents after hospitalization for pediatric injury (Davis et al., 2000). Test-retest reliability data varies by the type of traumatic event with poor to marginal agreement for reports of exposure to natural disasters, witnessing an accident, verbal agreement whereas fair to good agreement has been found for reports of witnessing another's death of serious injury, physical abuse, domestic violence, family arguments, and sexual injury (Daviss et al., 2000).

Achenbach youth self-report. The Youth Self Report (YSR; Achenbach, 2001) is a youth completed measure to assess child and adolescent psychopathology from 11-18 years of age. The YSR is the youth equivalent to the Child Behavior Checklist for youth ages 6 to 18 (CBCL/6-18, Achenbach, 2001) and contains 112 statements about their own problems and competencies in a standardized format. Respondents use a 3-point Likert scale to indicate how well each statement is true to them in the previous six months. The YSR includes 8 Syndrome scales (Anxious/Depressed, Withdrawn/Depressed, Somatic

Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, Aggressive Behavior). These Syndrome scales are grouped according to Internalizing Problems and Externalizing problems. For the Syndrome scales, T-scores of 65-69 are considered borderline whereas T scores above 69 are in the clinical range. Psychometric findings yield substantial internal consistency for the Syndrome scale (0.79) and Internalizing and Externalizing scale (0.90). Good test-retest reliabilities have also been found for syndrome scale (*M* α = 0.89) and Internalizing and Externalizing scale (*M* α =0.92), (Achenbach & Rescorla, 2001). The YSR was administered and collected for each participant every two weeks during the TYC study.

The UCLA PTSD reaction index for diagnostic and statistical manual of mental disorders., fourth editions (DSM-IV), Adolescents Version (UCLA-PTSD, RI; Sternberg et al., 2004) is a 22-item self-report instrument to assess DSM-IV PTSD symptoms in youth ages 7 to 18 years of age across a wide range of ages, settings, and cultures (Steinberg et al., 2004). The items can be summed to match DSM-IV diagnostic criteria or summed to form a severity score (range = 0 to 88). A cutoff score of 38 or greater yields greatest sensitivity for PTSD criteria (Steinberg et al., 2004), and a cutoff score of ≥ 25 (moderately severe PTSD) was required for inclusion in the TYC study. The UCLA-PTSD, RI has good convergent validity (0.70) with the PTSD Module for the Schedule for Affective Disorders and Schizophrenia for School Age Children (Sternberg et al., 2004). Psychometric properties derived from a large sample of children and adolescents from the National Child Traumatic Stress Network yielded good to excellent internal consistency reliability across age races, sex, and racial/ethnic groups (α =.88-.91), (Steinberg et al., 2013). Test-retest

reliability for the total scale is high (r=.84) for the interval range from 6 to 26 days (Rodriquez, Steinberg, Saltzman, & Pynoos, 2001). The symptoms scale of UCLA-PTSD, RI was administered and collected for each participant every two weeks during the TYC study.

Treatment acceptability questionnaire (TAP, Hunsley, 1992). The TAP is a brief six-item measure reflecting an individual's judgment of a particular treatment in terms of how acceptable it is, how ethical they believe it to be, how effective they think it might be, how likely it might be to have negative side effects, and how knowledgeable and trustworthy they believe the therapist is. The TAP has demonstrated adequate internal consistency (α=.81) and moderate to high correlations with other measures of treatment acceptability (Hunsley, 1992). Youth completed the TAP following the second TF-CBT session, to allow the practitioner to provide psychoeducation regarding the treatment approach and treatment rationale. Caregivers completed complete the TAP following their initial TF-CBT session.

Youth client satisfaction questionnaire (YCSQ; Shapiro, Welker, & Jacobson, 1997). The YCSQ a 14-item interview developed to assess aspects of treatment satisfaction important to youth. The instrument has two factor-derived scales, measuring Benefits of Therapy and Relationship with therapist. The measure has demonstrated good internal consistency (α=.90) and correlated well with parent satisfaction scores (r=.52; Shapiro et al., 1997). Youth completed the YCSQ following the final TF-CBT session.

TF-CBT Adherence Checklist. Therapists completed the TF-CBT Adherence Checklist following each TF-CBT session. The checklist identified any TF-CBT

components covered during that session, as well as any barriers that precluded completed of TF-CBT tasks (e.g. crisis arose, alliance concerns, nonparticipation by youth). Therapists also indicated whether homework was assigned and completed by the subject. Therapists also completed a 5-point Global Impression Improve scale (CGI-I; Guy Clearly, Close, Conners, & Covi, 1976). The CGI-I scale is commonly utilized in psychiatric efficacy trials to document provider perceptions of improvement from baseline.

TF-CBT treatment protocol. Treatment entails eight components, which uses the PRACTICE acronym: Psychoeducation and Parenting skills, Relaxation, Affective modulation, Trauma narrative, In vivo mastery of trauma reminders, Conjoint child-parent sessions, and Enhancing future safety and development. Psychoeducation serves to provide education regarding different kinds of trauma and related symptoms. Psychoeducation normalizes the youth's trauma experience and teaches them that their trauma responses are not unusual. Therapists also provide information about treatment including the empirical support for the treatment model. Parenting skills including praise and behavioral reinforcement are taught to optimize youth outcomes. These skills are helpful for increasing parent's ability to manage aggressive or angry behavior resulting from the traumatic experience. Relaxation techniques are taught to help reduce physiological responses to stress and trauma. The manual includes scripts for focused breathing, meditation, progressive muscle relaxation, and techniques to help youth maintain attention in the present. The relaxation component is critical for youth to learn how to manage adverse physiological reactions in their bodies. Affective expression and modulation aim to help youth regulate and express their feelings more effectively. Therapists teach youth

how to accurate identify and label feelings in both themselves and others. This component also includes teaching five different copies skills to manage negative affect including: Thought interruption and positive imagery, positive self-talk, enhancing the child's sense of safety, problem solving, and social skills building. Cognitive coping provides information youth on the cognitive triangle. Youth and parents are taught and that they can choose their own thoughts, which can alter their feelings and behaviors. This component also emphasizes that thoughts are sometimes be inaccurate or unhelpful on youth. The trauma narrative is gradual exposure to the trauma. The purpose is to develop a tentative hierarchy of increasing anxiety provoking stimuli to the traumatic event. Over the course of several sessions, the child shares more details of what happened before, during, and after the event. The therapist works to modify the youths' cognitive distortions throughout the narrative. The overall purpose of the trauma narrative helps decrease hyperarousal to trauma reminders, identify and correct distortions, and make meaning of the traumatic event. For youth with multiple traumatic events, the therapist can help youth make a timeline which encompasses multiple events. Development of the trauma narrative can take several sessions. In-vivo exposure includes using exposure therapy to resolve avoidant behaviors and desensitize trauma reminders. Conjoint-Parent components entail processing the trauma narrative with caregivers. During this phase caregivers practice parenting skills, which in turn reinforces their child's courage. The therapist's role is to facilitate healthy communication between the child and caregiver. The final component, enhancing personal safety and growth addresses the youth's sense of safety and develops a safety plan. Each PRACTICE component builds on previously mastered skills and concepts and they should

be delivered in the prescribed sequence. All PRACTICE components should be delivered to youth receiving the intervention.

Procedure. The original TYC included three research phases.

Approval by human subjects committee. The TYC study was conducted in compliance with the ethical principles and standards set forth by the American Psychological Association and the University of Texas at Austin. The TYC study was approved by the Institutional Review Board at the University of Texas (IRB # 2011-04-0116). Participation of human subjects began in February 2012 and ended August, 2015. The Texas Juvenile Justice Department does not have an IRB registered with the Office for Human Research Protections (OHRP) and identified the University of Texas at Austin as the IRB of record on their federal wide assurance for this study.

Phase 1. During Phase I, TF-CBT modifications were developed in collaboration with the PI's and TYC mental health providers. All TYC therapists were invited to participate in four stakeholder meetings. The initial meeting reviewed the following: key differences between outpatient and inpatient correctional psychological treatment, barriers to successful TF-CBT implementation, and potential TF-CBT adaptations. Following the first meeting, therapists completed a survey, which required them to rank implementation, organizational, and clinical barriers to providing treatment within correctional facilities. At the second meeting, stakeholders discussed the aforementioned survey and worked towards building a consensus on most important implementation issues. When a consensus could not be made, the PI's served as the final decision makers. The third meeting focused on how to implement the proposed adaptations without interfering with treatment adherence.

At the conclusion of the third meeting the PI's documented adaptations to the treatment protocol. For a review of the protocol adaptations see appendix B. The review of key adaptations will also be discussed later in the methods section. At the fourth and final meeting, the stakeholder team provided feedback on the documented treatment adaptations.

Phase II: Pilot trial Phase II included an open case trial using the adapted TF-CBT treatment approach. The open case trial enrolled three therapists, representing two of the three intervention facilities. Treatment was provided to six youth. No comparable wait list participants were enrolled. The open trial allowed the research team to make additional modification prior to a larger scale implementation of TF-CBT in correctional faculties.

Phase III of the project included a feasibility trial using the modifications to the TF-CBT model for juvenile correctional facilities. The original study also evaluated organizational barriers. This phase also included training therapists in TF-CBT. Additionally, client treatment acceptability was measured for participants who received the intervention. The data for the current study is comprised from Phase II and III.

Therapist recruitment. All therapists were recruited as study participants. The only offered benefit for participation was access to TF-CBT training. Facility clinical directors, whom provided contact information to the research team, initially identified therapists. Therapists were given the opportunity to opt out of initial contact by the research team. Research staff contacted therapists by phone and explained the study and roles and responsibilities of therapists as research participants. Research staff reviewed the consent form orally and provided a written copy via e-mail for reference. Signed, original consent forms were returned to the research staff in the mail.

Youth participant recruitment and screening. All youth volunteered to participate in the study. Facility therapists and case managers were asked to identify and refer youth who might benefit from participate in the research study. Most youth were identified by the therapists at the facility, but later recruitment efforts expanded to case manager referrals. Exclusion criteria defined by the TYC study included: 1) Expected release data or transfer data within 5 months from study enrollment data, 2) Current participation in the Sex Offender Treatment Program, 3) IQ less < 70, 4) Current high risk of suicidality, and 5) Current symptoms of active psychosis. Inclusion criteria were youth who were between the ages of 13 to 18 years old, had low to moderate mental health needs, and experienced one or more traumatic experiences, either documented in the record of acknowledged by the youth at intake or later in care. The referring provided completed a screening and referral form for the youth, and then presented a brief scripted summary of the study. The youth was asked if they were willing to have their guardian contacted for permission to participate and to hear more about the study from a researcher.

Youth who met the previously described eligibility criteria were approached by research staff to determine interest participation. Research staff explained the nature of the study, expectations of participation, and potential risks and benefits of participating. If youth provided assent for participation, the Texas Juvenile Justice Department Research Liaison contacted the youth's legal guardian through a letter with the accompanying consent form. The letter was followed by phone contact by the research or TYC staff to fully describe the study and review the consent form. All consent and parent contact forms were available in Spanish versions. TYC facilities support parental involvement through

meetings, providing transportation. Additionally, each facility had a designated parent advocate whose role was to provide support and education to families and encourage participation in the rehabilitation process.

117 youth were referred into the study. Fourteen youth did not meet the initial screening criteria for study entry. For nine youth, ineligibility was due to having fewer than five months remaining in their lengths of stay. Two instances were due to youth being enrolled in the sexual offender treatment, two were due to the youth being in the custody of child welfare, and one was due to recently completed TF-CBT. Twenty-six guardians could not be reached for consent or failed to return consent forms in the mail. Ultimately 68 youth participated in baseline assessments.

Baseline assessment procedures. When parent was received, research staff met with youth at the facility to obtain assent and conduct the initial assessment to verify if the youth met all eligibility criteria for the study. Research staff described the study to the youth, reviewed the risks and benefits to participation, and acknowledged their ability to opt not to participate or stop participation at any point without consequences. Youth were asked to sign one copy of the consent and provided another copy. Eight youth were age 18 and able to provide consent directly. During baseline assessment, youth were administered the DISC-IV and additional inclusion criteria for participation were 1) current diagnosis of post-traumatic stress disorder (PTSD), major depressive disorder, dysthymia, mania, agoraphobia, generalized anxiety disorder, social phobia or panic disorder, 2) scores of 25 or greater on the UCLA PTSD Reaction index. There were no exclusions for comorbid conditions or concurrent treatment, other than the Sexual Offender Treatment Program,

which includes a narrative intervention targeting previous trauma-experiences. After baseline assessment eleven youth were determined ineligible; ten youth did not meet full diagnostic criteria and one youth did not have elevated scores on the UCLA PTSD RI.

Treatment groups. Following recruitment and completion of the initial assessments, youth entered a run-in period, during which all subjects were assessed at 2 weeks and 4 weeks with no intervention. Following the run-in period, youth were assigned to participating therapist if a clinician was available and began TF-CBT. Otherwise, youth were placed on the wait list for treatment (usual procedure) and assessed according to the study protocol. Although random assignment to treatment and control condition would be preferable methodologically, TYC leadership felt that allowing youth to be removed from the waiting list as soon as an appropriate practitioner became available was a more equitable method of ensuring youth received services before leaving the facility. Although assignment to wait list versus TF-CBT treatment will not be random, removal from the wait list is expected to occur primarily due to time (first come/first serve), unless symptomatic worsening led to an increase in identified needs. The "outcome" of youth on the waiting list will be documented, to identify if they later receive TF-CBT, other psychotherapeutic interventions, or are placed in an alternative setting (e.g., TYC residential treatment facility, halfway house).

Incentives for youth time. Since youth were in restricted setting and had few privileges, incentives had to be carefully chosen so as not to put undue influence on youth for participation. However, youth were being asked to spend significant amounts of time completing assessment instruments, at times missing recreational and free time. Initially,

books and magazines were chosen as incentives. However, magazines were tightly controlled, with restrictions on certain magazine bindings (e.g. staples), articles, and advertisements. Most age appropriate magazines were not allowed in the facility. Later, incentives were expanded to include hygiene products, such as shampoo, toothpaste, or body wash. Toiletries were popular with the youth, however some staff disapproved of youth having the products if they had not achieved certain levels within the overall level system. Staff also became concerned it would be difficult to ensure that other youth didn't use them or that youth did not barter with them. There were a number of times when staff raised concerns about the hygiene products and agency leadership had to voice support for their continued use. In the final year of the study, the issue became significant enough that a change was made to the protocol to provide a $5 contribution to the youth's canteen account in lieu of other incentives. While the youth didn't always have privileges to purchase items at the canteen, they were allowed to take any money remaining their account when they were released from the facility.

Therapy procedures. Therapists were instructed to provide TF-CBT in weekly sessions for 45 to 50 minutes. The treatment is traditionally 12 to 16 sessions, but the protocol allowed for additional sessions thought to be needed by some youth due to complex trauma histories and symptomatology with the setting.

Measurement collection schedule. Following consent and assent, research staff conducted a baseline interview with youth. The baseline interview included the structured diagnostic assessment (DISC-IV), a structured interview of lifetime traumatic events (TESI), and two self-report measures of symptomology — the full UCLA-PTSD, RI

including symptoms and trauma exposure questions and the Achenbach YSR. Youth participants completed a minimum of four-week baseline-phase assessments with the UCLA-PTSD, RI and YSR to form a longitudinal baseline index of PTSD Symptoms. The two youth self-report measures were repeated every two weeks during treatment, lasting approximately six months. All assessments were completed with assistance by trained research staff. These procedures were conducted to demonstrate following initiation of treatment.

Therapist training. All therapists in the TYC study received a two-day, live training. Dr. Mannarino, a developer of TF-BT with extensive experience in practitioner training in the model, provided the workshop. The training focused on teaching the theoretical rationale for the approach, discrete practice elements of the intervention, and use of modeling, role-play, and feedback. Therapists were taught modifications to treatment for correctional facilities Modifications included strategies for engaging caregivers in treatment and education on the role of direct care staff in the treatment process. Training was supplemented with the web-based training program and resources, located at http://tfcbt.musc.edu, the published treatment manual. All therapists received a workbook with user-friendly session by session goals, psychoeducational materials, worksheets, and recommended reading lists.

Therapist supervision. Following the initial training workshop, therapists participated in bi-weekly group telephone supervision led by the treatment developer and facilitated by the Principal Investigator. Therapists were expected to participate in at least 75% of all supervision calls. Supervision call structure included the presentation of a client

by an identified therapist. The identified therapists provided a portion of the audiotaped session and participated in discussion of therapy skills and strategies. Supervision also allotted time for supervisees to discuss immediate questions or concerns.

Appendix B: TF-CBT Adaptions for Correctional Facilities

TF-CBT Treatment Considerations for Working in Correctional Facilities

The participatory adaptions processes resulted in a consensus=driven TF-CBT protocol modified for use with youth committed to correctional facilities. The following summarizes the protocol considerations that were developed through participatory process with TYC administration, study researchers, and TYC employed therapists.

Sequencing of treatments. Youth in correctional settings frequently have several behavioral health needs, and youth may require participation in intensive treatment programs based on the offense they committed. A framework was created to optimize and triage optimum sequencing of treatments. These included (a) the psychological need resulting in greatest impairment; (b) the causal factors that are theorized to be driving the primary need; (c) the treatment that is likely to result in the most significant and or/comprehensive impact on well-being, and (d) the treatment need that the youth is most motivated to address. While some concurrent treatment for trauma and other treatment needs (and preferred for substance use issues) youth were discouraged from involving in two different trauma treatments concurrently.

Engagement in Youth. Many youths in correctional facilities have significant concerns about the negative consequences of sharing their trauma. They may be concerned about seeming disloyal to family or getting themselves in additional trouble that could lengthen their confinement. Therapists should clarify their legal obligations and disclose information related to criminal activities or child abuse. Youth should be fully informed about the extent to which information shared in treatment will be kept confidential and the

situations in which clinicians need to disclose information. Youth should be allowed to make informed decisions about the extent of detail they choose to disclose in treatment.

Progression through treatment components. Because of the severity of trauma and related symptoms that may be present for some youth in the correctional setting, clinicians may need some increased flexibility in the order in which components are presented. Youth may have significant concerns about safety, which may warrant safety planning as it related to the youth's current environment early in treatment. Some youth may have difficulty tolerating psychoeducation regarding trauma until additional coping skills to manage distress have been developed. Therefore, the clinician may opt to provide training on relaxation skills and affective modulation prior to any exposure to trauma reminders through psychoeducation or early desensitization activities. For some youth, affective dysregulation may be causing significant difficulties within the facility (e.g. fights, loss of privileges) and may need to be addressed with some immediacy.

Support of treatment from staff. TF-CBT traditionally engaged the non-offending parent or other caregiver in the treatment process, including enhancing parenting skills to ensure consistent and effective responses to inappropriate behavior and facilitating generalization of TF-CBT skills though parent prompting or reinforcement of skill use outside of session. Youth in a correctional facility have limited interactions with their parents or other familial caregivers and spend most of the day with correctional officers. Correctional staff should be provided additional training and communication to facilitate their support of youth during and after treatment. Specifically, correctional officers should receive training (similar to TF-CBT psychoeducation) on the prevalence of trauma, it's

impact on youth, common physical, emotional, or behavioral disruption. An Additional component should include a discussion of the risk of retraumatization of youth and appropriate strategies to minimize this risk. In addition to training, treating therapists should communicate with correctional officers about the ways the officer can support an individual youth's mastery and generalization of skills.

Interruptions for "Crisis." Community therapists frequently cite moderate "crises" that youth or caregivers present during sessions as a barrier to progress in TF-CBT. Clinicians feel pressure to spend time addressing the presenting concerns, which can disrupt progress in meeting TF-CBT session goals. The "crisis" may even be more prevalent in a correctional facility, where youth may have few empathetic adults to listen to these incidents and where congregate living is likely to intensify the interpersonal conflicts common in adolescence. Several strategies were identified to help therapists with maintaining the therapeutic alliance with the youth but allowing these incidents to disrupt or slow the youth's progress in TF-CBT. Strategies provided in training to clinicians included clarifying the agenda at the beginning of a treatment session, practice applying the coping skills developed in TF-CBT to address the concern, or teaching a new skill such as exploring any distorted thinking that may be impacting feelings and behavioral responses.

Conjoint treatment sessions. TF-CBT includes conjoint sessions with the parent or other caregiver and youth, providing the opportunity for the youth to share their trauma narrative with a non-offending caregiver and receive an appropriate supportive response. For youth in correctional facilities, conjoin sessions may post challenges to TF-CBT

therapists. Youth may have very limited interactions with caregivers because of the significant distance from home. Relationships between caregivers and youth may be strained because of past events, such as parents' frustration with behavioral problems or youth's perception that his or her parent provide inadequate support or protection, In some situations, caregivers may be unwilling to recognize any remaining obligations to youth. Parents may also be distrustful of facility staff and view outreach by therapists though a law enforcement framework.

Although conjoint sessions are likely to pose additional difficulty in a correctional setting, they remain important to the treatment model. Therapist were encouraged to use non-traditional models to engage caregivers. When parents were unable to attend sessions, therapists could seek to include them on a regular basis through phone therapy sessions or during weekend visitation. Therapists could also bring the parent into the session through technology such as videoconferencing. Therapists were encouraged to begin to engage parents early in treatment and consider involving collateral providers in outreach efforts (community supervision officers or parent support liaisons). If parents were unwilling or unable to effectively participate in conjoint treatment sessions, therapists were asked to explore alternative supportive adults who may play this role. Examples of other adults would be someone likely to have a continuing relationship after the youth was released from the correctional facility such as grandparents, older siblings, aunt/uncles, or supportive friends. If an existing support was not available, therapists asked to consider inclusion of a caregiver associated with the facility with whom the youth has developed a trusting relationship, such as an assigned advocate, volunteer or a supportive staff member

(e.g. case manager or correctional officer). For such cases, careful discussion of confidentiality issues should be included in the preparation.

Core beliefs/schemas and criminal behavior. A significant number of youths residing in correctional settings are likely to have experienced multiple traumatic experiences during their lifetime. In many instances these experiences of chronic trauma can play a role in the development of delinquent behavior. For these youth, creating a trauma narrative may be difficult as the trauma is pervasive in their life, and the youth may be desensitized to trauma rather than distressed by it. For these youth, addressing the impact of these traumatic life experiences may need to occur through an examination of the youth's dysfunctional core beliefs. Examples of common core beliefs for youth with multiple traumas include "people will hurt me." "I have to be tough to be safe," and "I don't deserve love. These core beliefs go on to influence how the youth interact with their environment, influencing their interpersonal relationships, motivation for the future, and assessment of self-worth. Clinicians should be encouraged to gather information during initial sessions to identify prominent themes among a youth's thoughts and beliefs. Helping youth recognize these core beliefs and identify ways in which they impact the youth's current thoughts, feelings, and behaviors, become an important component of the intervention, with particular attention being paid to the role that these beliefs have played in the youth's delinquent behaviors.

In-vivo desensitization. One potential challenge of providing TF-CBT in the correctional setting is a result of youth's restricted movement. In vivo desensitization is a component of TF_CBT used to distress caused by trauma reminders. Because youth were

incarcerated, clinicians may have limited capacity to engage youth in in vivo desensitization activities. Important trauma reminders (e.g. car rides, a neighborhood location, or individuals) may not be accessible. Clinicians may have to be creative in their use of imaginal desensitization or take advantage of any off facility privileges the youth may have during treatment.

Safety planning. Clinicians may also struggle with how to apply the safety planning component of TF-CBT. In most settings, safety planning assists children with addressing past traumas, allowing them to reduce the unhelpful distress they experience to trauma reminders. However, some arousal is protective and youth in correctional settings may benefit from some increased awareness to safety concerns. In addition, clinicians may not fully know the environment to which youth will return after they are released and fully desensitizing youth to danger cues may not be desirable. The recommendations provide by Cohen, Mannarino, and Murray (2011) for youth with on-going trauma may be applicable with some youth in correctional settings, as well, even though they may be relatively safe in their current placement. The authors recommended a) enhancing safety early in treatment, such as helping the youth identify safe locations within the facility and safe adult with whom they can seek help, b) optimally focus on the trauma narration and processing, such as helping the youth discriminate between real danger and trauma reminders. The authors also discuss the importance of engaging the caregiver in treatment to enhance his or her ability to project the youth. This task is no less important for incarcerated youth who may return to environments in which trauma is likely to occur. If may also be helpful for

youth to have booster TF-CBT focused on safety planning during the planning for the youth's release.

Appendix C: PRATICE FiRST Observational Coding Measure

Key
Not Shaded: Competence with Youth
Shaded: Competence with Caregiver

PRACTICE FiRST

		Therapist Adherence	Therapist Competence			
		Time Estimate (across full session)	1 Poor Competence	2 Fair Competence	3 Adequate/Good Competence	4 Excellent Competence
	Non-Specific Treatment Elements					
1.	**Warmth and acceptance** Definition: The therapist demonstrates good interpersonal skills, including warmth, concern, genuineness, and professionalism.	N/A	1	2	3	4
			1	2	3	4
2.	**Developmental engagement** Definition: The therapist utilizes developmentally appropriate activities to engage the child or youth, strives to make treatment sessions enjoyable, and utilizes praise and other rewards to encourage active participation.	N/A	1	2	3	4
3.	**Use of Time** Definition: The therapist structures the session to allow for furthering treatment progress. Session activities are not rushed.	N/A	1	2	3	4
			1	2	3	4
4.	**Facilitative Balance** Definition: A balance between therapist facilitation and youth or caregiver exploration is reached, such that neither individual dominates the interaction.	N/A	1	2	3	4
			1	2	3	4

		Therapist Adherence	Therapist Competence			
		Time Estimate (across full session)	1 Poor Competence	2 Fair Competence	3 Adequate/Good Competence	4 Excellent Competence
5.	**Addressing Individual Concerns** Definition: The therapist provides the youth or caregiver with sufficient opportunity to describe concerns or issues that arise during treatment. The therapist uses TF-CBT component(s) to assist in addressing the concern, either through teaching a new skill or reviewing a previously learned skill and its relevance to the current concern, when possible. The therapist does not allow addressing the concern to impede meeting session goals. Significant crises are assessed and addressed immediately.	N/A	1	2	3	4
			1	2	3	4
6.	**Parent Support of Treatment** Definition: Parent is taught how to support the youth's progress in treatment through an understanding of the skills taught, information on how to prompt use of skills outside of sessions, and strategies for reinforcing the child's practice and implementation of skills.	☐ N/A parent not in session	1	2	3	4
7.	**Homework Review** Definition: The therapist reviews previous home assignments to check for understanding or address any problems. If not completed, the therapist chooses an appropriate strategy to facilitate the lesson (e.g. completion in session, renegotiation of the assignment, problem solving).	☐ N/A- no HW review	1	2	3	4
		☐ N/A- no HW review	1	2	3	4

8.	**Homework Assignment** Definition: The therapist provides appropriate assignments to reinforce previously taught skills and encourage generalization outside of the treatment session. The therapist ensures that the child or caregiver has an adequate understanding of the skill to be successful in the practice assignment.	☐ N/A- no HW review	1	2	3	4
		☐ N/A- no HW review	1	2	3	4
		Therapist Adherence	Therapist Competence			
		Time Estimate (across full session)	1 Poor Competence	2 Fair Competence	3 Adequate/Good Competence	4 Excellent Competence
	Youth Techniques					
9.	**Psychoeducation**: Definition: Therapist provided psycho-education to the youth about the trauma (e.g., directive education about the traumatic event, normal reactions to trauma, and instills hope), psychotherapy, TF-CBT, and relevant diagnoses. Any myths are dispelled.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
10.	**Relaxation:** Definition: Therapist explained the physiology of relaxation and instructed on methods of relaxation. The therapist worked to ensure a minimum level of mastery by the youth and identify strategies that the youth prefers.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
11.	**Affective Expression:** Definition: Therapist assisted the child in accurately identifying their feelings and discussing a variety of	☐ N/A ☐ Brief Review Only	1	2	3	4

	different feeling states. The therapist uses non-threatening discussion or activities to engage the youth in the treatment process.	☐ 1-25% ☐ 25-50% ☐ >50%				
12.	**Affective Modulation** Definition: Therapist assisted the child to learn various ways of regulating their emotions (e.g. imagery, thought stopping, positive self-talk). The youth has opportunities to practice coping strategies through assignments.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

		Therapist Adherence	Therapist Competence			
		Time Estimate (across full session)	1 Poor Competence	1 Fair Competence	3 Adequate/Good Competence	4 Excellent Competence
13.	**Cognitive Coping:** Definition: Therapist reviewed the cognitive triangle, educating the child on the connection among thoughts, feelings, and behaviors and helping the child generate alternative thoughts that are more accurate or helpful, in order to feel differently. The youth is able to apply the cognitive triangle to events within their life.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
14.	**Trauma Narrative** Definition: Therapist developed a trauma narrative with the child, and worked to modify cognitive distortions throughout the narrative. The therapist assesses the level of distress experienced by the youth during the development of the trauma narrative and prompts the youth to use relaxation and other coping strategies.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

15.	**In Vivo Desensitization** Definition: Therapist identified any avoidant behaviors, developed an in-vivo desensitization plan, and worked to resolve avoidant behaviors.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
16.	**Safety Planning** Definition: Therapist addressed the child's sense of safety and developed a safety plan (if needed). A safety plan is developed in a timely fashion, regardless of the point in treatment, if the child could be in a dangerous situation.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
17.	**Skills Development** Definition: Therapist taught problem-solving skills, communication skills, and/or social skills as needed by the child. The therapist assessed the need for additional skills development, and provides appropriate skills practice.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

	Caregiver Participation **Caregiver or Conjoint Techniques**	☐ (15 min or longer)				
18.	**Psychoeducation:** Definition: Therapist provided psycho-education to the caregiver about the trauma, psychotherapy, TF-CBT and relevant diagnoses. Any myths are dispelled.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
19.	**Parenting Skills:** Definition: Therapist taught parenting skills (e.g., time out, selective attention, praise, reinforcement plans). The therapist encouraged the parent to try out new skills and follows up to reduce barriers and enhance effectiveness.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
20.	**Relaxation:** Definition: Therapist explained the physiology of relaxation and demonstrated the methods of relaxation taught to the child. The therapist addresses how the parent can support the child's use of relaxation strategies.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
21.	**Affective Expression:** Definition: The therapist reviews skills taught to the child and encourages caregiver discussion of emotions during therapy. The therapist trains and/or encourages caregiver to identify and respond appropriately to child's verbal expression of emotions.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

22.	**Affective Modulation:** Definition: Therapist reviews the strategies for affective coping taught to the child and enlists the caregiver to support the youth's practice outside of therapy. The therapist assists the caregiver in strategies to address their own coping with difficult emotions.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
23.	**Cognitive Coping:** Definition: The therapist reviews the cognitive triangle and cognitive coping strategies taught to the child. The caregiver is taught ways to apply the skills to their own cognitive distortions (if appropriate) and methods to support the youth in applying the skills outside therapy.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
24.	**Trauma Narrative:** Definition: The therapist reviews the trauma narrative as it is developed with the caregiver. The therapist assesses the level of distress experienced by the caregiver and the caregiver's ability to manage his/her response to the narrative. The therapist coaches the caregiver on supportive responses prior to conjoint sessions.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

25.	**Conjoint Trauma Narrative Session:** Definition: Therapist holds a conjoint session during which the youth shares the trauma narrative with a caregiver.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4

26.	**In Vivo Desensitization:** Definition: The therapist works with the caregiver to have the youth confront feared stimuli, providing appropriate support to ensure that the youth is successful.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
27.	**Safety Planning:** Definition: The therapist works with the caregiver to implement the child's safety plan.	☐ N/A ☐ Brief Review Only ☐ 1-25% ☐ 25-50% ☐ >50%	1	2	3	4
	Patient Difficulty	0 Very receptive; no difficulties	1 Slight difficulty	2 Moderate difficulty	3 Very difficult; poor receptivity	4 Extremely difficult
	Caregiver Difficulty	0 Very receptive; no difficulties	1 Slight difficulty	2 Moderate difficulty	3 Very difficult; poor receptivity	4 Extremely difficult

Appendix D

OFFICE OF RESEARCH SUPPORT

THE UNIVERSITY OF TEXAS AT AUSTIN

P.O. Box 7426, Austin, Texas 78713 · Mail Code A3200
(512) 471-8871 · FAX (512) 471-8873

FWA # 00002030

Date:

PI:

Dept:

Title:

RE: Non-Human Subjects Research Determination

Dear

The Office of Research Support (ORS) reviewed the above protocol submission request and determined it did not meet the criteria for human subjects research as defined in the Common Rule (45 CFR 46) or FDA Regulations (21 CFR 56). IRB review and oversight is not required because the activities involve:

- ☐ No human interactions
- ☐ Classroom activities used to teach methodology and technique
- ☐ Program evaluation where results are not generalized to other services or programs
- ☐ Secondary use of de-identified data set (no direct or links to identifiers)
- ☐ Obtaining information that is not about living individuals
- ☐ Obtaining information from publicly available sets
- ☐ Biographical research that is not generalizable beyond the individual
- ☐ Archival research using existing literature
- ☐ Other (Explain):

At this time you are free to begin your research as IRB approval is not necessary. You should retain this letter with the respective research documents as evidence that IRB review and oversight is not required.

If you have any questions contact the ORS by phone at (512) 471-8871 or via e-mail at orsc@uts.cc.utexas.edu.

Sincerely,

James Wilson, Ph.D.
Institutional Review Board Chair

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